



## A Study of Age Demographics across the Aviation and Missile Materiel Enterprise

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### Abstract

The Budget Control Act of 2011 along with sequestration is forcing the Department of Defense to reduce expenditures significantly compared to post 9/11 spending. As the Army reduces in strength, so will the civilian workforce at commensurate levels (Tan, 2015). The civilian Defense workforce has been challenged to address proper age diversity as they seek to balance experience with building the bench for tomorrow. The culprit behind this dilemma is due mostly to the hiring restrictions in place prior to 9/11. These restrictions caused gaps in the age histograms where certain age groups are disproportionately lower than others (Nataraj, Hanser, Camm, & Yeats, 2014). As the baby boomer generation now retires from the workforce, the gap becomes apparent as there is a smaller pool of human resources to fill the vacancies left by the baby boomers. This paper studies the severity of the human resource challenge in researching a microcosm of the defense acquisition workforce- the Aviation and Missile Materiel Enterprise located at Redstone Arsenal, AL. An analytical study of the demographics in present day population is studied in order to help make inferences as to what may occur in the future. The results should be an aid to the human resource managers across the civilian acquisition workforce who are forced with tackling this challenge.

# **Table of Content**

Abstract.....	4
Chapter 1 – The Manpower Challenge.....	8
History That Shaped the Acquisition Workforce.....	8
The Future Challenge.....	10
The Problem Statement.....	10
Chapter 2 – Literature and Data Review.....	12
Chapter 3 – Research Methodology.....	13
Determining the Eligible Retirement Pool.....	14
Predicting Retirements.....	16
Forecasting the Supply of Human Resources.....	18
Research Hypothesis.....	20
Limitations of the Study.....	21
Chapter 4 – Research Findings.....	22
The Aviation & Missile Command – Redstone.....	22
Program Executive Office for Missiles and Space.....	29
Program Executive Office for Aviation.....	34
The Aviation & Missile Research Development and Engineering Center.....	39
The Army Contracting Command- Redstone.....	44
The Aviation & Missile Materiel Enterprise.....	50
Chapter 5 – Observations and Conclusions on the Data.....	53
Chapter 6 – Recommendations.....	57
References.....	61
Glossary of Acronyms.....	63

### List of Figures

Figure 1: AMCOM Age and Years of Service Trends for Voluntary Retirements.....	16
Figure 2: AMCOM Distribution on Voluntary Retirement Age (FY05-15).....	17
Figure 3: AMCOM Number of Personnel Opting for Voluntary Retirement by FY.....	19
Figure 4: Profile of the Various Job Series at AMCOM-Redstone.....	23
Figure 5: Histogram of Age at AMCOM-Redstone (FY15).....	24
Figure 6: AMCOM Average Age as a Function of Time.....	25
Figure 7: Histogram of Years-Service at AMCOM-Redstone (FY15).....	25
Figure 8: AMCOM-Redstone Retirement Eligibility by Labor Category.....	26
Figure 9: AMCOM-Redstone Retirement Eligibility of Supervisors.....	28
Figure 10: Profile of Job Series at PEO M&S.....	29
Figure 11: Histogram of Age at PEO M&S (FY15).....	30
Figure 12: Histogram of Years-Service at PEO M&S (FY15).....	30
Figure 13: PEO M&S Retirement Eligibility by Labor Category.....	31
Figure 14: PEO M&S Retirement Eligibility of Management.....	32
Figure 15: Profile of Job Series at PEO AVN.....	34
Figure 16: Histogram of Age at PEO AVN (FY15).....	35
Figure 17: Histogram of Years-Service at PEO AVN (FY15).....	35
Figure 18: PEO AVN Retirement Eligibility by Labor Category.....	36
Figure 19: PEO AVN Retirement Eligibility of Managers.....	37
Figure 20: Profile of Job Series at AMRDEC.....	39
Figure 21: Histogram of Age at AMRDEC (FY15).....	40
Figure 22: Histogram of Years-Service at AMRDEC (FY15).....	41
Figure 23: AMRDEC Retirement Eligibility by Labor Category.....	42
Figure 24: AMRDEC Retirement Eligibility of Supervisors.....	43
Figure 25: Profile of the Job Series at ACC-Redstone.....	45
Figure 26: Histogram of the Age at ACC-Redstone.....	46
Figure 27: Histogram of the Years-Service at ACC-Redstone.....	47
Figure 28: Histogram of the Years-Service of 1102s at ACC-Redstone.....	47
Figure 29: ACC-Redstone Retirement Eligibility by Labor Category.....	48
Figure 30: ACC-Redstone Retirement Eligibility of Supervisors.....	49
Figure 31: Profile of the Job Series Across the Aviation & Missile ME.....	51
Figure 32: Histogram of the Age Across the Aviation & Missile ME (FY15).....	51
Figure 33: Histogram of the Years-Service Across the Aviation & Missile ME (FY15).....	52
Figure 34: Consolidated Summary of Results.....	53
Figure 35: Histogram of 1102 Series Age at ACC-Redstone.....	56

### **List of Tables**

Table 1: Sample Civilian Personnel Data Extract from DCPDS.....	14
Table 2: Sample Civilian Personnel Data Computations.....	15

## **Chapter 1 - The Manpower Challenge**

As the active Army continues to reduce end strength over fiscal years 2016 and 2017, the Army civilian workforce will also experience reductions in strength at proportionate levels (Lytell, et al., 2015, p. 143). Army officials have backed off of initial estimates of a 17,000 reduction in the civilian workforce (between FY 16-17), but have stayed consistent in asserting civilian reductions should be expected through attrition, including hiring controls and voluntary incentives (Tan, 2015). These reductions are driven in large part by the Budget Control Act (BCA) of 2011. Most Army commands implemented hiring restrictions by 2013 and the furloughs followed that same year. The BCA continues to force the Army's workforce to become leaner over the next few years. Downsizing is expected through Base Closure and Realignment Commission (BRAC), normal attrition, hiring freezes and possible voluntary separation incentives such as Voluntary Separation Incentive Pay (VSIP) and Voluntary Early Retirement Authority (VERA) (Lytell, et al., 2015).

### **History that Shaped the Acquisition Workforce**

A look at the civilian drawdowns of the 1990s offers valuable insight as to what may be expected in the upcoming years. During the decade following the end of the Cold War, the Department of Defense (DoD) experienced nearly a forty percent decline in the civilian workforce. The reductions came about by Base Realignment and Closure (BRAC) and attrition through hiring freezes and voluntary retirements, very similar to what is being discussed today. Studies from the civilian drawdowns of the 1990s showed that such a methodology is effective, but does come with drawbacks. In particular, DoD suffered from imbalances in demographics



and skills as well as a much older civilian workforce (Lytell, et al., 2015, pp. 141-142). Most commands seek to ensure diversity in the workforce through Human Capital Strategic Plans to help spur creativity and innovation. Unfortunately, hiring freezes can make it very challenging to maintain the desired blend of demographics when the inflow is constrained. As an example, studies showed that DoD civilian clerical and blue-collar workers suffered a disproportionately higher attrition rate compared to professional and administrative job series and the median age of civilian worker rose from 41 (1989) to 46 (1999) (Lytell, et al., 2015, pp. 141-154).

One of the other impacts observed from the drawdowns in the 1990s is something that is commonly referred to as the “bathtub effect”. As a consequence of hiring restrictions, specific age and years of service groups begin to become excluded from the DoD labor pool. Once inflow resumes, a histogram of the age and years-service profile in the workforce resembles a bathtub showing a relatively high number in youthful and older years, with much fewer in between as a consequence of the freeze. Certain functional disciplines were severely impacted and displayed noticeable gaps in the Army civilian demographics after hiring picked up after 2004. One such function was the contracting series (1102s) where there was a noticeable gap between eight to eighteen years of service as profiled in 2011 (Allen, Doran, & Westbrook, 2011, pp. 1, 41). Another evident gap was the first line supervisors in the Army Contracting Command between the ages of thirty to mid forty as of 2011 (Allen, Doran, & Westbrook, 2011, p. 34). Clearly, the reductions of the 1990s created an imbalance in skill and experience and the issue was exacerbated by an aging workforce where many become eligible to retire in the next few years (Allen, Doran, & Westbrook, 2011, p. 25).

G-1, command Human Resource Managers and the Office of Personnel Management closely monitor attrition rates and keep a watchful eye upon any impending imbalances in

skillsets or job series. The VERA, VSIP and retention allowances are tools that are most commonly used to help control the desired “shape” of the workforce. VERA and VSIP are tools that shape the attrition rates and can be tailored towards specified series or labor classifications predicted and determined to be too high in strength. Conversely, the retention allowance serves as an attrition tool to provide certain employees the incentive to stay in civilian service if it is predicted that the strength in their areas will become dangerously low. Studies have shown that these three methods of financial incentives are effective in influencing attrition (Asch, 2003, pp. 1-2).

### **The Future Challenge**

The challenge to cut the civilian workforce while still accomplishing the goals and objectives of a command’s human capital strategic plan is a significant one for the Army’s civilian human resource managers. This paper will highlight some of those challenges by taking a closer look into the demographics of the U.S. Army Aviation and Missile Materiel Enterprise (ME). The Aviation and Missile ME consists of the Aviation and Missile Command (AMCOM), the Program Executive Offices (PEO) for both missile and space as well as aviation, the U.S. Army Aviation and Missile Research Development and Engineering Center (AMRDEC), and the U.S. Army Contracting Command-Redstone (ACC-RSA). These five organizations are all centrally located at Redstone Arsenal, Alabama with responsibility for materiel management, from concept to combat (U.S. Army Aviation and Missile Life Cycle Command, 2012, pp. 6-7).

### **The Problem Statement**

BRAC actions are not currently slated to affect the Redstone area, but could be reevaluated in 2017 (Department of Defense, 2014, p. 48). Therefore, the Aviation and Missile

ME is bracing for another round of drawdowns through normal attrition (G1 Staff, personal communication, 2015). If history is any indication, this means that another “bathtub” is being created that will impact the ability to integrate the millennial generation into the Aviation and Missile ME. In the meantime, the baby-boomer generation is now leaving the workforce under voluntary retirements and potentially exposing the gap in age /service demographics created during the 1990s. If this gap was not appropriately filled during hiring actions prior to the recent hiring restrictions, there could be a significant supply problem in human resources to meet future demands.

How healthy is the supply of human resources in the Aviation and Missile ME behind the baby boomer generation? How aggressive will the Aviation and Missile ME attrition be due to voluntary retirements and which job series stand to suffer the most? This paper will address those questions and make some inferences about what the future Aviation and Missile ME age demographics may look like by the year 2020 as a consequence of limited to no inflow. This paper may be used to benefit the human resource managers across the ME who are faced with a significant challenge over the next few years. That challenge is to ensure the right number of people with the right set of skills and competencies in the right job at the right time (Nataraj, Guo, Hall-Partyka, Gates, & Yeung, 2014, p. xi). To complicate the challenge, HR managers will be faced with “poaching” of employees between commands (Allen, Doran, & Westbrook, 2011, p. 71) and must therefore give strong consideration to retention and development actions.

## **Chapter 2 - Literature & Data Review**

### **RAND Corporation Research Papers**

The challenges associated with human resources over the next few years is no big secret to the Department of Defense. Clearly they are concerned with the impacts of supply and demand of civilian personnel as evidenced by a significant number of studies they have tasked the RAND Corporation to complete. The RAND Corporation is a research organization that “develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous” (Nataraj, Guo, Hall-Partyka, Gates, & Yeung, 2014). The data and conclusions from four of these reports were used as a basis to help make inferences about the data analyzed as well as conclusions on what the future Aviation and Missile ME may look like.

### **The Defense Civilian Personnel Data System (DCPDS)**

Human Resource managers across the Aviation and Missile ME use the Defense Civilian Personnel Data System (DCPDS) as the warehouse for storing employee information. Each of the five organizations provided a raw data file that snapshots the profile of the workforce data in DCPDS with all Personally Identifiable Information (PII) removed. This research analyzes this data using Excel to produce graphical charts and statistical data to help draw conclusions.

### **Human Capital Strategic Plans (HCSP)**

Lessons learned from the drawdowns of the 1990s prompted a DoD decision for the civilian acquisition workforce to create a plan that addresses the human resource challenges. In 2000, the Acquisition 2005 Task Force recommended the development of Human Capital Strategic Plans to address the civilian workforce. Specifically, these plans focus upon recruiting, hiring, retention, recognition, training and development. Human resource managers have a great

hand in writing these plans which offer an excellent understanding of how the organization(s) intend to address the future challenges. This researcher was successful in acquiring HCSPs for the ACC and AMCOM, but they were not available for the other three organizations.

### **U.S. Office of Personnel Management (OPM) Handbooks**

This researcher frequently utilized guidance from OPM resources that offered information and the various grade series structure as well as detail on eligibility for voluntary retirements. Eligibility rules for voluntary retirement depend upon whether or not the employee is covered under the Civil Service Retirement System (CSRS) or the Federal Employees Retirement System (FERS). OPM handbooks were used as the primary reference to ensure whether an individual was eligible for voluntary retirement or not. Rules were set up in Excel to determine eligibility as a function of age and years of service.

## **Chapter 3 - Research Methodology**

This research uses a mixed method design of the quantitative and qualitative approach. Statistical data was calculated on past human resource numbers through a quantitative method. The trends and statistics of past and present day were utilized to help make inferences about the future through a qualitative method.

This researcher frequently sought consultation with each of the five Aviation and Missile ME organization's human resource departments through meetings, e-mails and phone conversations. Each organization was kind enough to provide a raw data file in Excel format containing needed demographics of their current workforce as of early November 2015. This file was stripped of all Personally Identifiable Information (PII) and offered a line item for each employee with age, years of service, retirement plan, supervisory status and career program code and/or job series. A sample snapshot from the AMRDEC raw data file is shown in Table 1.

Table 1

*Sample Civilian Personnel Data Extract from DCPDS*

Pay Plan Perm	Occupnl Srs Perm	Years of Service	Age in Years	Retirement Group	Supv Status description	AR Psn Car Pgm Cd description
DB	0899	4	24	FERS	Non-Supervisory	Engineers & Scientists (Non-Construction)
DB	0899	7	26	FERS	Non-Supervisory	Engineers & Scientists (Resources & Construction)
DB	0830	0	22	FERS	Non-Supervisory	Engineers & Scientists (Non-Construction)
DB	0861	0	22	FERS	Non-Supervisory	Engineers & Scientists (Non-Construction)
DB	0801	1	23	FERS	Non-Supervisory	Engineers & Scientists (Non-Construction)

*Note.* Only a small subset of the rows and columns of the full table are shown for clarity. Data within is a snapshot in time. (Hodges, 2015)

The software tool used to extract data from DCPDS and create a data report was not always the same across each of the five ME organizations. As a consequence, some organizations were not able to provide certain attributes that others could.

### **Determining the Eligible Retirement Pool**

Analysis was conducted to determine retirement eligibility across the Aviation and Missile ME population. Only voluntary retirements were considered using the rules of the Federal Employees' Retirement System (FERS) and Civil Service Retirement System (CSRS), which are listed below (Office of Personnel Management, nd):

#### **FERS:**

- a) Of Minimum Retirement Age (MRA) and have at least 30 years of service; or
- b) At least 60 years of age and have at least 20 years of service; or
- c) At least 62 years of age and have at least 5 years of service

#### **CSRS:**

- a) At least 55 years of age and have at least 30 years of service; or

- b) At least 60 years of age and have at least 20 years of service; or
- c) At least 62 years of age and have at least 5 years of service.

The Minimum Retirement Age (MRA) as required by FERS was also calculated for each employee under the FERS retirement group. MRA is a function of date of birth (Office of Personnel Management, nd). The date of birth was one attribute that was not always available due to the software differences as described earlier. The lack of data revealing the date of birth forced the MRA to be calculated based on age. A slight error in data is therefore recognized. Given that the data was secured in early November, the line items with actual birthdates of late November and December are off by one year. However, the resultant adjustment to MRA is only 2 months between years. Therefore, the error is considered negligible. A new column was then added to specify eligibility as a function of MRA, age, years of service and retirement system. The process was repeated to offer a look five years from now by adding five years to age and years of service (hereinafter referred to as the +5 LOOK test). A snapshot of the added columns is shown in Table 2.

Table 2

*Sample Civilian Personnel Data Computations*

Years of Service	Age in Years	Retirement Group	Supv Status description	Ar Psn Car Pgm Cd description	MRA	RETIRE ELIG?	+5 LOOK
10	58	FERS	Supervisor or Manager	General Administration & Management	56	NO-YOS	YES

*Note.* Only a small subset of the rows and columns of the full table are shown for clarity. Data within is a snapshot in time. (Hodges, 2015)

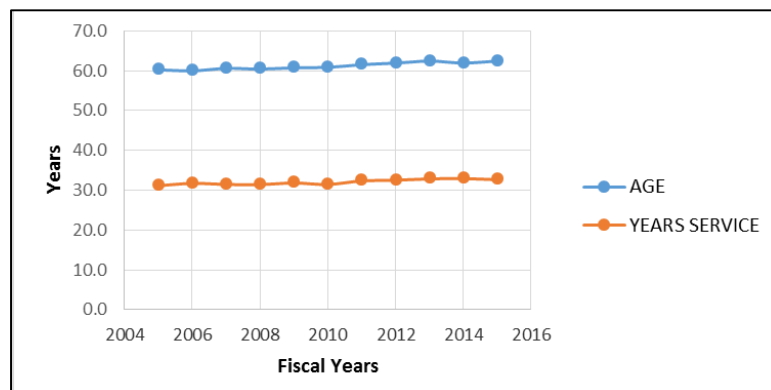
As noted in the table, if the employee was determined to be ineligible, a descriptor indicating which logic test failed is provided. For example, the employee in Table 2 presently

has an age that exceeded the MRA. However, the test for retirement failed because the needed years of service for this MRA is 30. In five years, the employee will be older than 62 and only need 5 years of service to become eligible. Therefore, he/she passes the “+5 LOOK” test.

### Predicting Retirements

A study by the Bureau of Labor Statistics asserts that individuals aged 55 and older are staying in the workforce longer. Participation rates of individuals 55 and older have been on a steady increase from a 30.3% participation in the workforce in 1985 to 37.2% in 2005 (Mossisa & Hipple, 2006, p. 36). These statistics show that the relationship between retirement eligibility and attrition are changing with time.

To forecast predicted attrition rates associated with retirement, this research studies historical data to help make future predictions. An Excel data report was received from AMCOM that captured all retirements within the command between FY05-FY15. This time span capturing 3,614 employees was considered sufficient to understand potential trends in voluntary retirement attrition. A study of the trends showed surprising results as depicted in Figure 1.



*Figure 1.* Trends over the past ten years showing how the average age and years of service for voluntary retirements have changed in the AMCOM. (Hodges, 2015)



As can be seen in Figure 1, the trends do show a slight increase from year to year. In FY 2005, the average age of separation was 60. In FY 2015, the average age of separation was 62.5. The average across these eleven years was 60.6 years. Also noteworthy is that the years of service creeps slightly higher as a function of time just as the age.

A cumulative distribution of the 3,614 voluntary retirements as a function of age was plotted using Excel. A cumulative Weibull distribution was used to fit the curve shape to the maximum extent possible. Results are displayed in Figure 2 below.

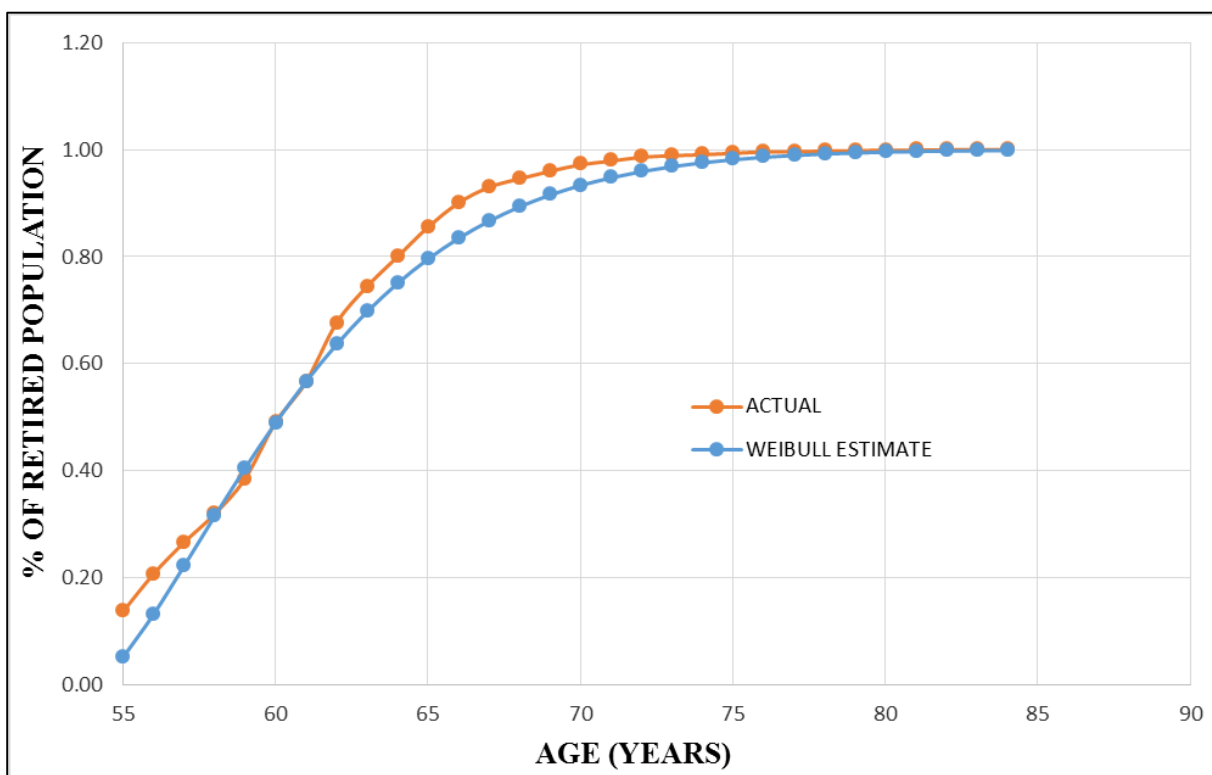


Figure 2. Cumulative distribution on personnel age of those who opted for voluntary retirement between FY05-15. The figure shows how the Weibull distribution function was created to best fit historical data. These Weibull parameters were used to make predictions on when personnel would opt for retirements in the future. (Hodges, 2015)

The Weibull curve allows for rough predictions on attrition rates of eligible employees for voluntary retirement. It is noteworthy, that this technique is merely a rough estimate under the assumption that the future population will behave as a sample population did over the past eleven years. The Weibull curve is not a perfect correlation to actual data with a maximum error of 8.5% (under-predicting). Therefore, emphasis should not be placed on this technique providing a quantifiable answer, but an inference towards a “generalized understanding. For example, consider a pool of ten eligible employees who are all 58 years old. The Weibull method predicts that 31%, or with the error, somewhere between two and four will actually opt for retirement. The “generalized understanding” from this example should be an expectation that the majority of this pool will likely opt to remain in the workforce until half have retired by age 61 and all have retired by 79.

### **Forecasting the Supply of Human Resources**

According to Mathis, Jackson & Valentine (2014), the supply of human resources in a given future year is equal to:

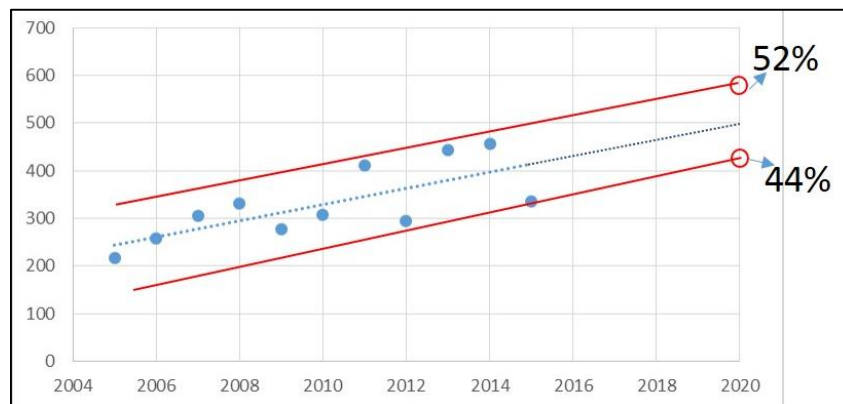
$$\text{Current Staff Level} - \text{Projected Outflows} + \text{Projected Inflows}$$

As discussed earlier, the BCA is pressing the need to reduce the civilian workforce. Therefore, projected outflows will exceed the projected inflows over the next five years. In considering the projected outflows, it is noteworthy there may be several sources (i.e. turnover, terminations, deaths, etc.). Likewise, there are many sources for inflows (i.e. internal transfers, external hires, promotions, etc.) (Mathis, Jackson, & Valentine, 2014, p. 52).

In making forecasts under this study, this researcher makes an initial underlying assumption that inflows are frozen over the next five years. As the workforce ages, estimates will

then be made regarding potential losses due to voluntary retirements. All other sources of outflow will be assumed to follow historical rates (see following paragraph for elaboration). A forecasted attrition rate will then be calculated for a future date five years from now. Labor supply in late 2020 can then be forecasted and compared to target strength numbers to test the “frozen inflow” assumption. The “frozen inflow” assumption is expected to be proven unfeasible (due to a relatively old workforce). If determined unfeasible, qualitative assessments will be made on the quantity of internal transfers using the RAND studies. In consideration of transfers in, a final qualitative assessment on the potential for external hiring action will be made in order to achieve future targeted strength levels. When an organization’s targeted strength was unavailable, it was assumed to be commensurate with the weighted average across the organizations that did report (~13% reduction in strength by FY19).

As mentioned previously, the other reasons for outflow will assume to follow historical rates. This researcher used data from the total AMCOM population to make inferences on total attrition. Figure 3 below displays a graphical representation that substantiates the workforce truly is aging evidenced by the rise in voluntary retirements from year to year.



*Figure 3.* Number of personnel who opted for voluntary retirement as a function of fiscal year within AMCOM. Percentages shown depict the upper and lower bounds of what voluntary retirements could be of the total attrition in fiscal year 2020. (Hodges, 2015)

According to the FY15 AMCOM Human Capital Fact Book, in 2015 voluntary retirements accounted for 39% of the total attrition. Figure 3 suggests that rate will not stay constant and will rise. If all other reasons for departure remain at a relatively constant rate, the data above infers that voluntary retirements could feasibly jump between 44% - 52% of the total attrition by 2020. For conservatism, the research assumes that voluntary retirements are 45% of the total attrition in 2020.

In addition to the total strength, the assessment will also take a close look at specific skillsets or job series that the organization considers as a core competency. As the workforce ages, the analysis will identify any job series and management positions that are forecast to be significantly impacted due to voluntary retirements. Conclusions can then be made about the future supply and demand rates for specific functions. Furthermore, a disproportionately low attrition rate of a specific series compared to others offers insight into VERA or VSIP potential for that specific labor category.

### **Research Hypothesis**

The expectation from reading a number of commentaries and published studies is that the civilian acquisition workforce is not currently ideally postured in age and years of service (experience) to meet the future demands of the mission. The underlying assumption is that large gaps in certain age groups create a “bathtub effect” in age and years-service histograms. This problem will be exacerbated by the current and near term hiring restrictions. As the baby boomer generation continues to age and leave the workforce under voluntary retirements, the

“bathtub effect” begins to inflict severe challenges on organizations as a consequence of a sparse pool of candidates to replace the retired workforce.

### **Limitations of the Study**

This study focuses on the Redstone Arsenal / Huntsville, AL geographic location of the Aviation and Missile ME. Recognizing that organizations such as the ACC and AMCOM have employees all across the country, it is important to note that the data herein only captures the ME employees in the Redstone location. Statistics taken from the Redstone locations as per this study are not an accurate representation of the commands as a whole. For example, the number of supervisory positions eligible for retirement at AMCOM-Redstone was found to be 57% in 2020 compared to 45% in 2020 across all of AMCOM. Similarly, a warning was received that the demographics (age, years-service and job series distribution) for ACC-Redstone are very much different for the ACC as a whole (ACC-G1, personal communication, November 5, 2015). Therefore, inferences about the higher echelon commands based on statistical data from this study should not be made.

Due to sensitivity of Personally Identifiable Information (PII), birthdates could not be provided within the data files provided by HR managers. As a consequence, only employee age was provided as of the date the report was generated. In the case of the data file from PEO M&S, the retirement plan could not be provided and eligibility had to be determined under the assumption each employee was in the FERS program. As such, a slight error is recognized in retirement eligibility rates and attrition numbers presented herein. Numbers from this study should therefore be considered as approximate estimates that are based on historical trends. Furthermore, the inferences and conclusions made by this study are based upon a single snapshot in time (data reports from DCPDS). Demographics will obviously not be constant since inflow

and outflow of personnel continue to fluctuate. Therefore, the conclusions of this study can easily change as a function of time and would require frequent periodic updates to ensure accuracy of predictions.

The Aviation and Missile ME should not be considered an all-encompassing study of human resource challenges in the Redstone civilian workforce. There are many other crucial organizations across “Team Redstone” that play vital roles in support of Army acquisition initiatives. The paper will only focus upon the Aviation and Missile ME due to the expansive and cumbersome scope of analyzing each and every partner. The focus upon the Aviation and Missile ME bounds the analysis, and points to a need for future research to supplement this paper.

## **Chapter 4 - Research Findings**

### **The Aviation and Missile Command (AMCOM) - Redstone**

The AMCOM has a mission to “Equip, Enable, Integrate and Sustain Aviation and Missile systems and provide calibration and repair support for all Army TMDE” (U.S. Army Aviation and Missile Life Cycle Command, 2012, p. 2). To accomplish this mission, there is a heavy reliance upon material maintenance and supply managers. Figure 4 depicts a profile of the present day workforce at AMCOM Redstone by labor series.

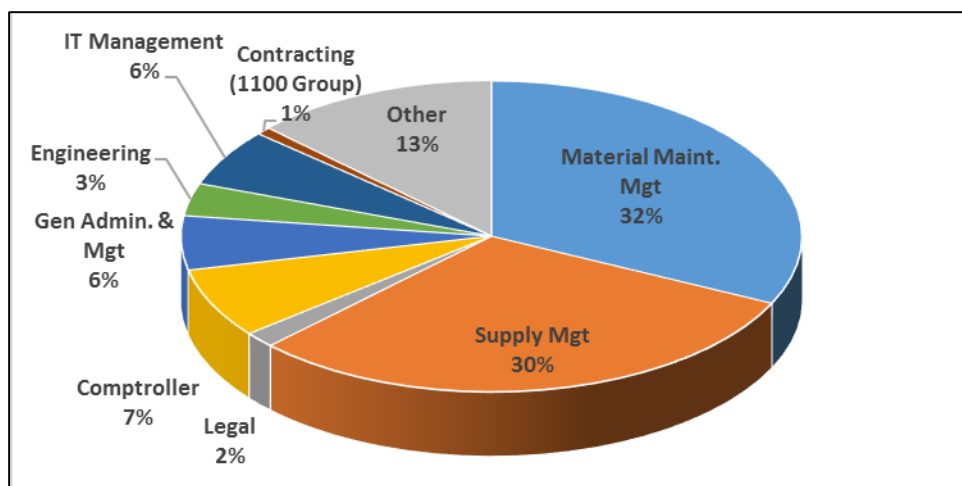


Figure 4. Profile of the various job series at AMCOM-Redstone. (Hodges, 2015)

AMCOM-Redstone is faced with the challenge of reducing their Table of Distribution and Allowance (TDA) by 14.5% between fiscal years 2016 and 2019 (AMCOM-G8, personal communication, November 2, 2015). The challenge AMCOM faces is to reduce their TDA while maintaining their crucial core competencies of acquisition logistics, field and sustainment maintenance, sustainment logistics, calibration and repair of test measurement and diagnostic equipment, and foreign military sales. In addition to ensuring core competencies are maintained, G-1 also endeavors to keep the proper mix of diversity, enhance operational and institutional knowledge across the workforce and maintain the crucial skills of material maintenance and supply management. AMCOM G-1 fully recognizes the increases in retirement eligibility and the threat posed to their crucial skillsets. The AMCOM Human Capital Plan infers that recruitment will maintain the proper strength in crucial skillsets (U.S. Army Aviation and Missile Life Cycle Command, 2012, pp. 11-47).

Analysis of data received from DCPDS included a total strength of 2,563 employees at the Redstone Arsenal location with an average age of 48.6 and average years of service equal to

14 years. This population excludes AMCOM employees outside of the Redstone / Huntsville area (34% of AMCOM work in Huntsville / Redstone according to the FY15 AMCOM Human Capital Fact Book).

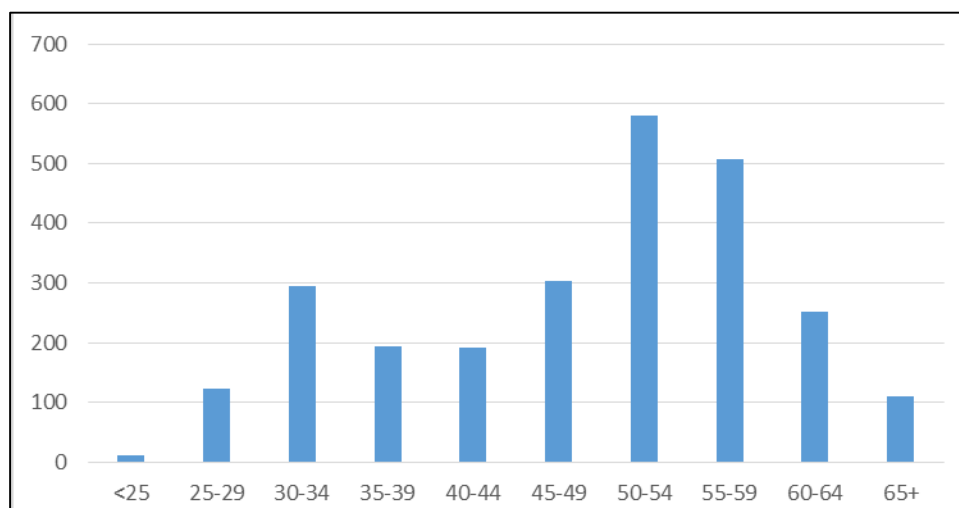


Figure 5. Histogram of age at AMCOM-Redstone (FY15). (Hodges, 2015)

The histogram (Figure 5) shows a high percentage of the workforce reaching retirement eligible ages. It is noteworthy that the age distribution histogram for AMCOM clearly displays the “bathtub effect” (note ages 35-44 in Figure 5) in the age groups that were most impacted by the hiring freezes of the 1990s. Although AMCOM has worked diligently to close this gap during the post 9/11 build-ups, evidence of the earlier freeze still remains. The average age of the AMCOM-Redstone workforce is 48.6 years and a median age of 51.

AMCOM G-1 has worked hard to reduce the average age of the workforce over the past few years. Figure 6 shows the downward trends and indicates management is taking action to prevent excessive “graying of the workforce” as mentioned in the 2015 RAND study (Lytell, et al., 2015, p. 141). The trends shown in Figure 6 serves as evidence that AMCOM is making great strides in accomplishing their goal of diversity (in age) as defined by their Human Capital Strategic Plan (U.S. Army Aviation and Missile Life Cycle Command, 2012, p. 19).



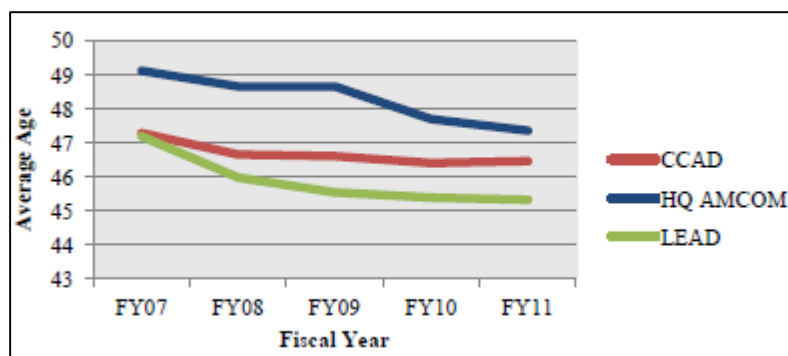


Figure 6. AMCOM average age as a function of time. (U.S. Army Aviation and Missile Life Cycle Command, 2012, p. 40)

The years of service among the AMCOM-Redstone population is shown in Figure 7 below.

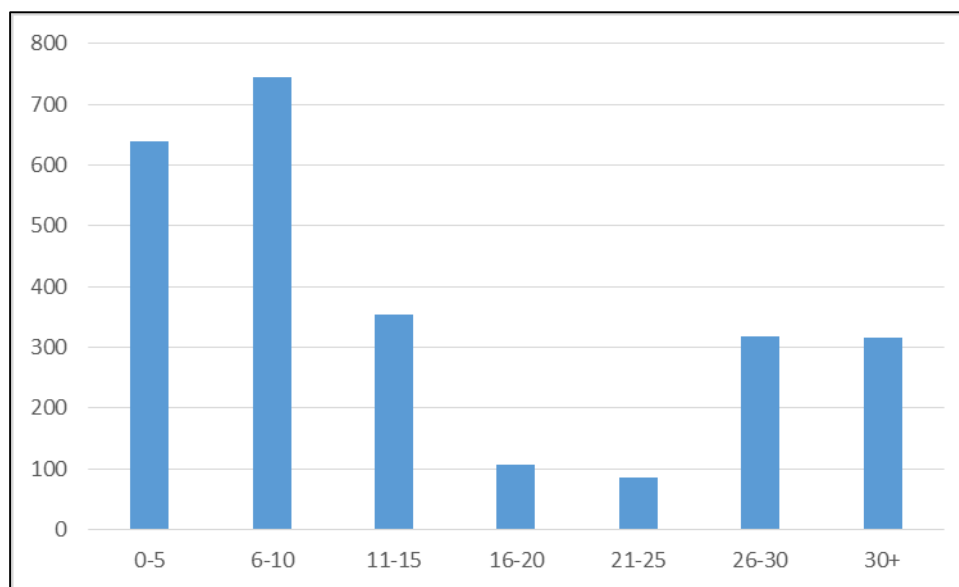


Figure 7. Histogram of years-service at AMCOM-Redstone (FY15). (Hodges, 2015)

With Figure 7, the “bath-tub effect” is once again present with respect to years of government service (note years 16-25). The average years of service in AMCOM-Redstone is only 14 years. Considering the disparity with the average age of 48.6, it is possible that AMCOM-Redstone may have hired a number of veterans, or possibly in-sourced many of their

contractor workforce. Noteworthy in Figure 7 is that 6-10 years is the largest population bin, which would have been during the build-ups between 9/11 and sequestration.

The AMCOM workforce is a blend of personnel under both the CSRS and FERS retirement systems. Considering the eligibility rules as they apply to each employee, analysis indicates that only 16% of the present workforce is eligible for voluntary retirement. Under the “no inflow” assumption as described earlier, those eligible for voluntary retirement increases to 37% in five years.

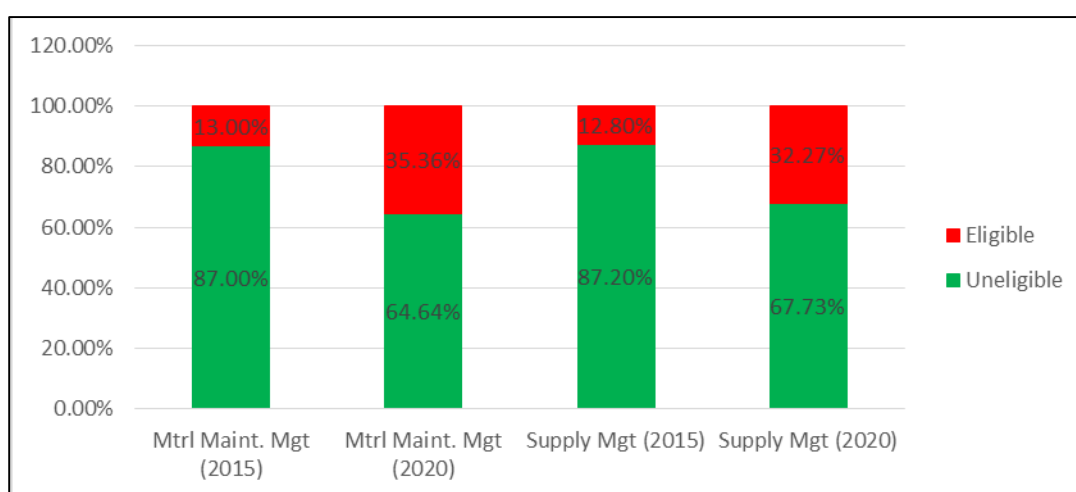
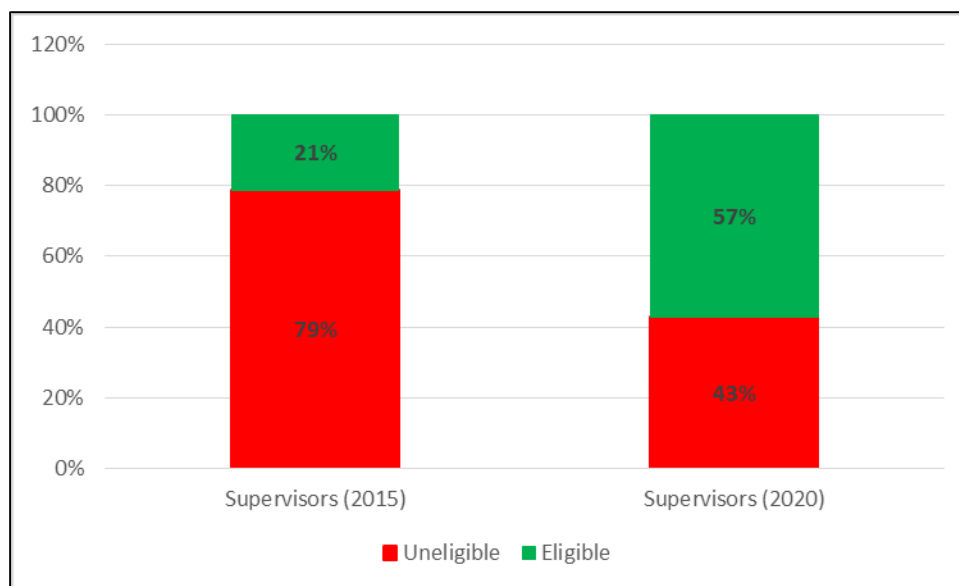


Figure 8. AMCOM-Redstone retirement eligibility as a function of labor category. (Hodges, 2015)

Two of AMCOM’s critical skillsets which comprise the preponderance of their total workforce is analyzed in Figure 8. Under the “no inflow assumption”, those eligible for voluntary retirement increases to 35% and 32% for each skillset respectively in five years. Using the retirement predictor technique as described earlier, estimates for these two labor categories suggest that roughly 23% of the material managers and 21% of the present population of supply managers will opt to voluntarily retire five years from now. Under the original assumption stated earlier (voluntary retirements could be ~45% of total attrition), this would suggest that an additional 28% of material managers could be lost due to total attrition by 2020. Given these

numbers are significantly higher than the target TDA reduction of 14.5%, it means that roughly 300 material managers and 250 supply managers must be brought on board AMCOM-Huntsville between the beginning of FY16 and the end of FY20. By inference, AMCOM is highly likely to need to continue recruitment in these two labor categories over the next five years. Retirement eligibility five years from now across all job series in AMCOM ranges between 20% - 50%. Given that there were no job series reductions predicted to less than 14.5%, tools to influence increased outflow such as VERA or VSIP should not be required. Some retirement eligibility percentages associated with unique job series are significantly higher than target reduction numbers. The higher rates of retirement eligibility suggest that retention allowance and/or recruitment will be required. For example, the Legal job series population is presently at 29% eligibility for retirement. In five years, that number increases to 57%. The retirement predictor method suggests that 45% of the present population in legal will opt to retire within the next five years. Although legal represents a very small portion of the AMCOM population (2%), the personnel in this labor classification will likely experience much turnover in the coming years if not financial opportunity through promotions or possible retention allowances.

Positions classified as supervisory at AMCOM-Redstone were also analyzed. The data shows that 13% of the workforce are currently classified as supervisor or manager. Of that pool, 21% are currently eligible for retirement with growth to 57% by 2020 (see Figure 9). Retirement prediction methodology suggests a number closer to 34% loss by 2020. A predicted attrition of 34% of the present day supervisors is tied for the highest rate (with PEO M&S) across the Aviation & Missile ME. Opportunities for career advancement will certainly exist in AMCOM for the pool that remains.



*Figure 9. AMCOM-Redstone retirement eligibility of the supervisory positions. (Hodges, 2015)*

AMCOM is currently under a “one for two” rule as directed by AMC Commander, General Via (AMCOM-G1, personal communication, January 25, 2016). Under “one for two”, an external hire is permitted only when two positions are vacated. Given that AMCOM is not going to want to reduce their available positions any more than they have to, “one for two” essentially forces the hand of recruitment to be more transfers than new hires. Of the additional 550 material and supply managers assumed to be needed over the next five years, a simple calculation suggests that roughly 100 would be new hires and the balance of 450 would be needed transfers from another government organization in order to yield the 14.5% reduction in strength. The key takeaway is not the value of the numbers themselves given the recognition that there are many assumptions therein. Instead, the takeaway is how high the relative demand will likely be for transfers in order for AMCOM-Huntsville to accomplish their mission as long as the “one for two” rule stays in effect. In total, roughly 1000 employees will need to be hired on in order to achieve the targeted reduction strength.

### Program Executive Office for Missiles & Space (PEO M&S)

The Program Executive Office for Missiles and Space along with the subordinate Project Management Offices plan to reduce their human capital strength by approximately 10% between FY16 and FY19 (PEO M&S G-1, personal communication, December 29, 2015). The general administrative group (300 series) comprises 67% of their labor population and is clearly their crucial core competency as they depend upon matrix personnel from the AMRDEC for the engineers and the AMCOM for supply and logistics specialists (Figure 10).

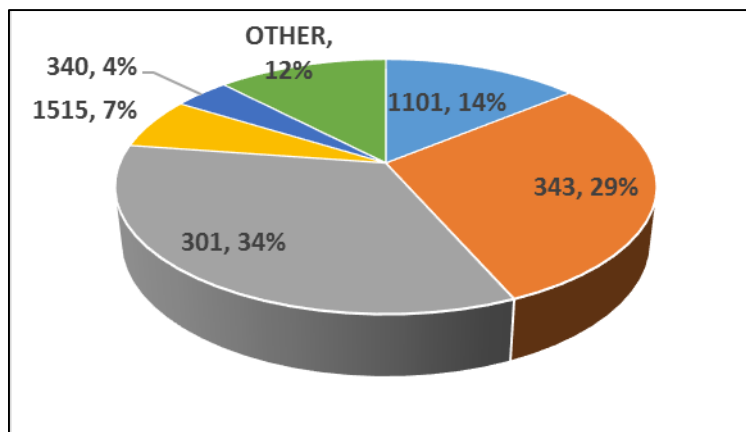
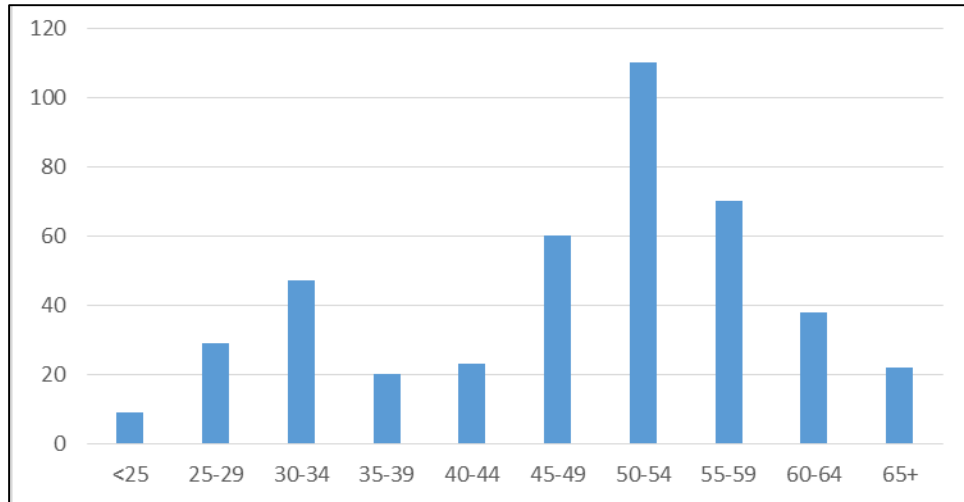
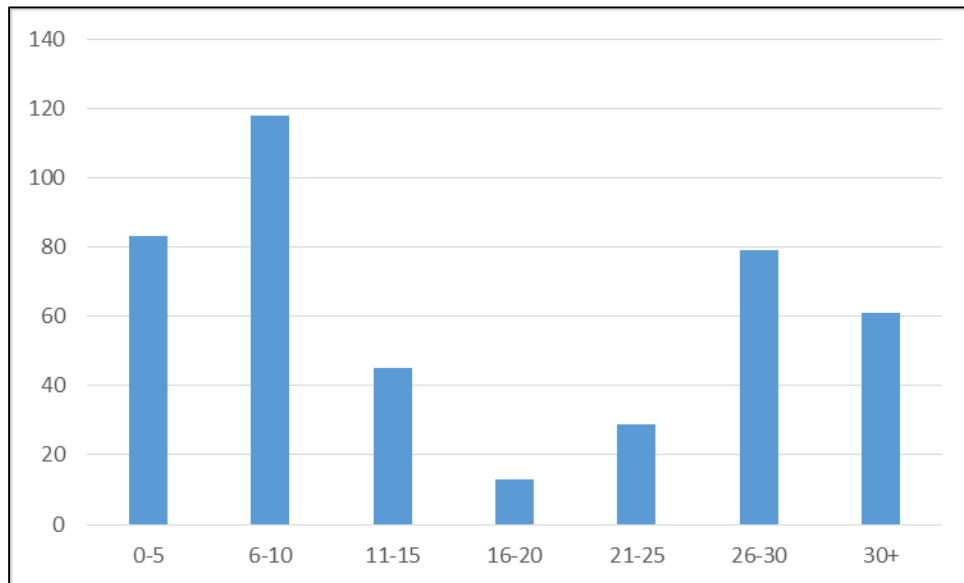


Figure 10. Profile of the various job series at PEO M&S. (Hodges, 2015)

The average age of PEO M&S employees is 48 with 16 years of service. These numbers track closely with the averages of the Material Enterprise. The age histogram is somewhat bimodal in nature (Figure 11) given two different sets of normalized distributions in shape. The “bathtub effect” is clearly evident in the age histogram noting the gaps in ages 35-44. Likewise, there is a similar gap in years of service between years 11-25 (Figure 12).



*Figure 11.* Histogram of age at PEO M&S (FY15). (Hodges, 2015)



*Figure 12.* Histogram of years-service at PEO M&S (FY15). (Hodges, 2015)

The “bathtub effect” in both age and years of service is evident in Figures 11 and 12, likely as a consequence of the 1990s hiring freezes. The bimodal nature of the distribution makes the averages somewhat deceiving when making predictions on future changes in human resources. This may explain why PEO M&S has the highest amount of personnel eligible for retirement in 2020 (40%) across the Material Enterprise even though their age and years of service averages

are commensurate with the other organizations. In fairness to PEO M&S, a more experienced workforce is necessary given their mission as described in the following paragraph.

A closer look at the primary labor series shows a high dependency on the 343 and 301 categories. The 301s are typically the more seasoned veterans who have developed enough skills and knowledge through years of experience to be qualified to provide administrative and management functions over a major defense acquisition program. The 343s serve as analysts and advisors to the organizational management (U.S. Office of Personnel Management, 2009).

Figure 13 below shows a retirement eligibility rate commensurate with the 40% organizational number discussed earlier. Specifically, approximately 40% of the 343s and 301s become eligible by 2020. Although the 340s represent a much smaller percentage (4%) of the workforce, their eligibility jumps to 65% by 2020.

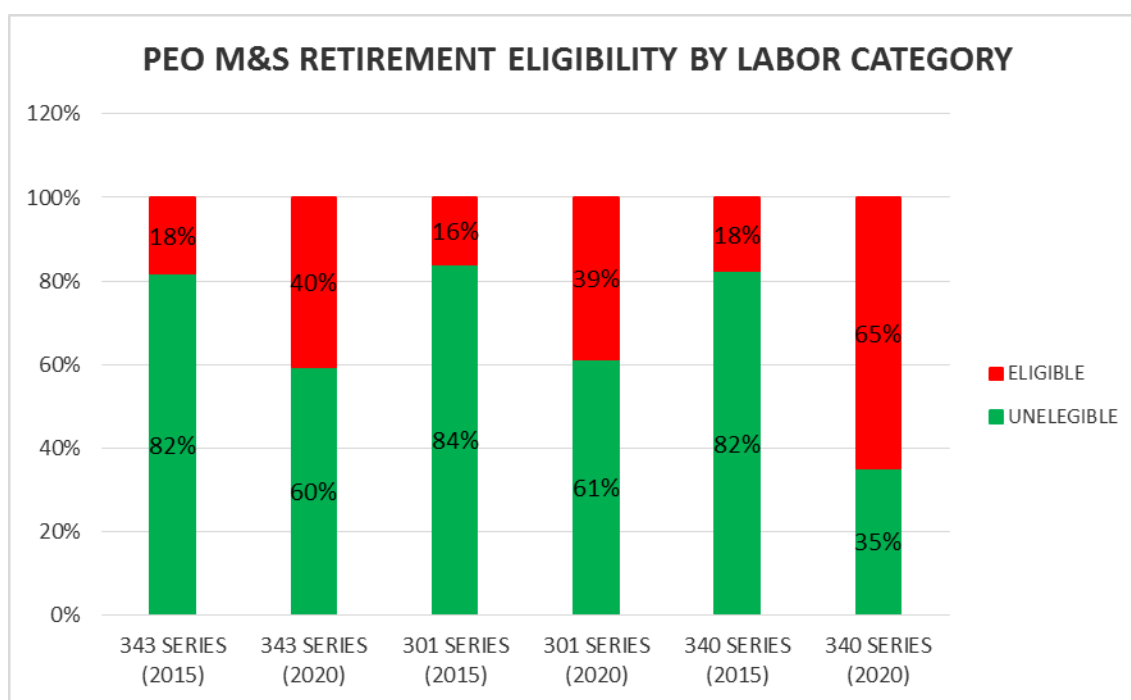
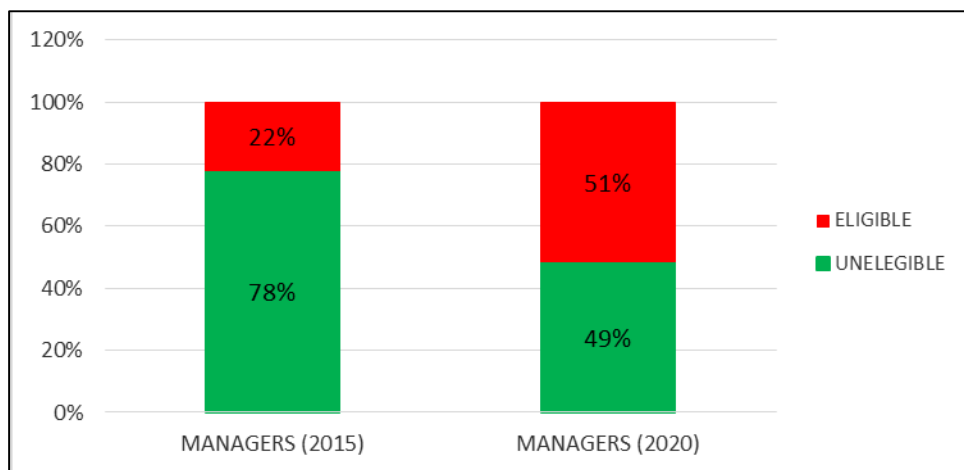


Figure 13. PEO M&S retirement eligibility as a function of labor category. (Hodges, 2015)

The retirement prediction method infers a number closer to 25% of the 343 and 301s who are likely to opt to take the voluntary retirement. This method also predicts a number of

approximately 40% of the 340s will be lost through voluntary retirement. The 25% core competency loss is commensurate with typical retirement attrition across the Material Enterprise. However, should PEO M&S desire to retain the 343 function, developmental initiatives for new entries or existing personnel and/or retention incentives will need to be considered.

A closer look at the managers is depicted in Figure 14. In this case, the managers and supervisors are defined as all NH-IV, GS-14 and GS-15 level personnel. As discussed in Chapter 3, raw data reports received from organizations were not always consistent due to software differences. Supervisory classification was not available for the PEO M&S data which forced the analysis to center only upon NH-4, GS-14 and GS-15 (referred to herein as managers).



*Figure 14.* PEO M&S retirement eligibility of management. (Hodges, 2015)

By 2020, 51% of the current pool of management will be eligible for retirement. This number is right at the average mark across the Material Enterprise. An interesting note here is that although eligibility is at normal levels for management (average is 55% across the ME), the age and years-service of this pool are comparatively higher than the others. The retirement prediction method infers somewhere around 34% of this pool of eligible employees are likely to



take the voluntary retirement making it tied for the highest (along with AMCOM-Redstone) across the Aviation & Missile ME.

According to the RAND study, Army Acquisition Support (assumed here to be commensurate with PEO M&S) only reduce their strength by roughly 3% between FY13-17 under a hiring freeze. Under the RAND study, a hiring freeze was defined to be no new external hires, but transfers into the organization at historical rates. The conclusion from this study was that Army Acquisition typically secures much more of their workforce through transfers from other organizations (Nataraj et al., 2014). If PEO M&S follows consistently with the conclusions of the RAND study, then their needed 10% reduction in strength could be accomplished without any new external hires if they so choose and the trends of the past are true for the future. The PEO is not under any hiring restrictions provided they follow their targeted strength levels. At stake are an estimated 125 crucial 301 and 343 positions that will need to be filled assuming voluntary retirements account for 45% of total losses (as discussed earlier) between FY16-20. Based on personal conversations with PEO M&S G-1, hiring actions will not likely only encompass transfers as human resources typically takes advantage of veterans preference hiring actions as well. The data leads towards the conclusion that there will still be some external hiring actions in the future for PEO M&S in order to acquire 301 and 343s, but not many. Analysis also shows that an estimated 21 crucial 1101 positions will need to be filled. The likelihood is strong that the qualifications and skills associated with this type of position will mean targeting a transfer from the ACC. Total estimated inflow need was calculated to be roughly 190. The fact that PEO M&S will have more than their fair share of management positions open in the near future helps provide even more incentive for personnel from the other organizations to make a transfer.

Finally, a look across all job series reveals that none are abnormally low with regards to expected attrition rates from voluntary retirement. Furthermore, the attrition rate due to expected retirements over the next five years are significant compared to the targeted reductions in strength (25% retirement attrition vs 10% strength reduction). Projected overall attrition is an indicator that reduced human resource strength may be achieved without the need for a VERA or VSIP.

### The Program Executive Office for Aviation (PEO AVN)

The Program Executive Office for Aviation along with the subordinate Project Management Offices thereof seek to reduce their human capital strength by approximately 8% between FY16 and FY19 (PEO AVN G-1, personal communication, December 29, 2015). Like PEO M&S, the general administrative group (300 series) comprises 67% of the population and is clearly their crucial core competency. One difference with PEO M&S is that PEO AVN is not totally dependent upon the AMRDEC for engineering as 15% (with 12% being 0801 and 3% various other 0800 series) of the core workforce is of the 0800 series engineering function. The 1101 business function is of comparable strength (Figure 15).

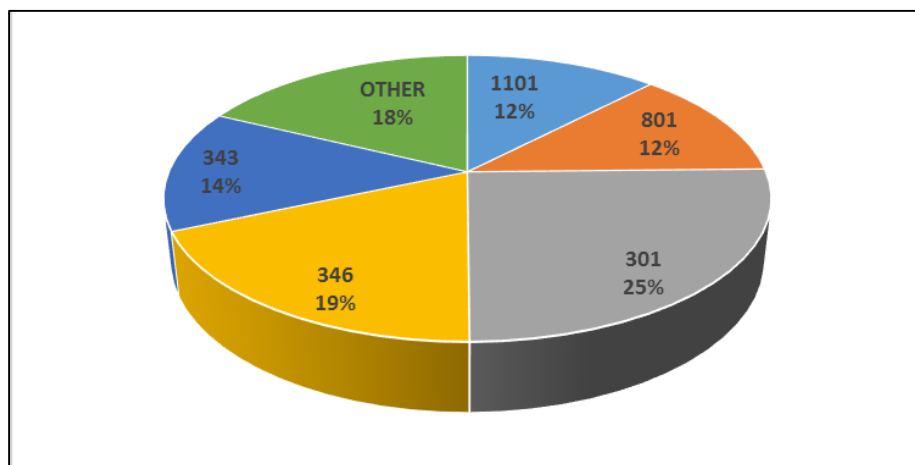
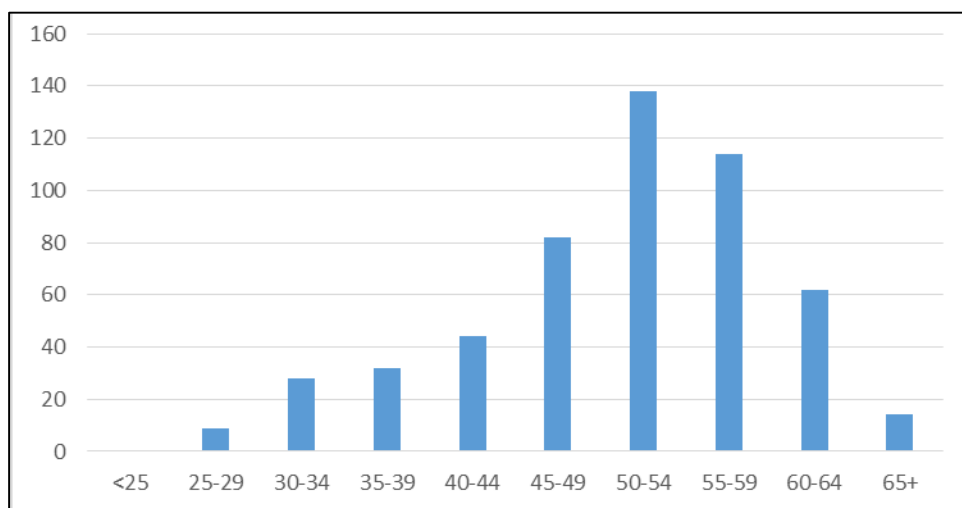
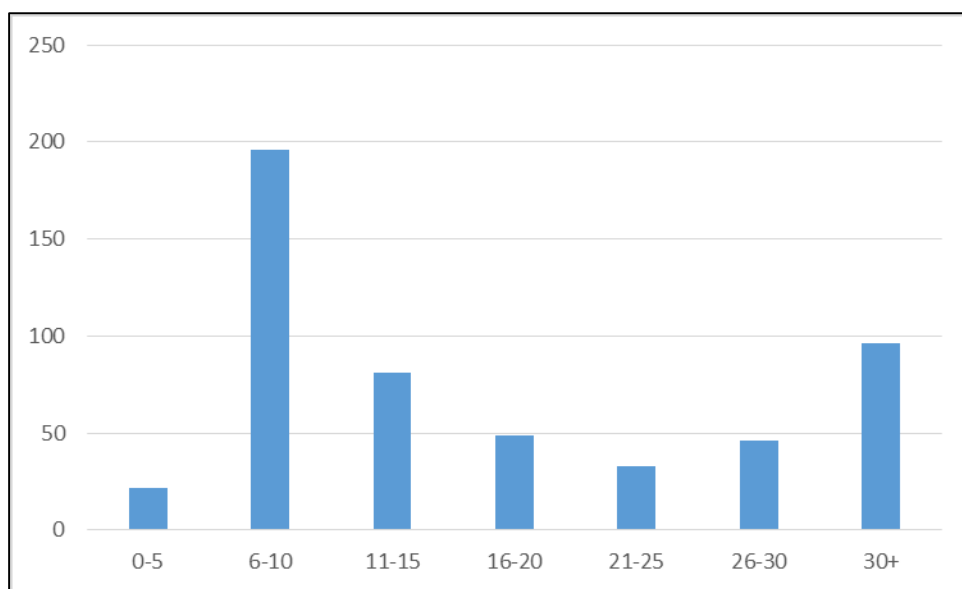


Figure 15. Profile of the various job series at PEO AVN. (Hodges, 2015)

The average age of the PEO AVN employee is 51 with 16.4 years of service, the highest of any organization within the Aviation and Missile Material Enterprise. The age histogram shown in Figure 16 indicates the older workforce.



*Figure 16.* Histogram of age at PEO AVN (FY15). (Hodges, 2015)



*Figure 17.* Histogram of years-service at PEO AVN (FY15). (Hodges, 2015)

The histogram depicting PEO AVN years of service (Figure 17) helps to explain why PEO AVN has the oldest workforce in the Material Enterprise, yet does not have the highest

retirement eligibility rates. In contrast to the older skew in the age histogram, the years of service is skewed towards less time in civilian service. This infers many personnel who leave military service in Army aviation are taking civilian 300 series program manager positions. PEO AVN also shows the apparent “bathtub effect” (Figure 17) with respect to experience from the hiring freezes pre 9/11.

The retirement assessment across the primary job series shows an equally distributed retirement eligibility (Figure 18). As such, there are no specific job series at risk of being disproportionately weakened due to voluntary retirements. The likelihood of conducting a VERA or VSIP in order to balance out the desired workforce profile appears very low. The retirement prediction method infers that of the total eligible population, approximately 28% will likely opt to select the retirement option by 2020. This percentage is the highest across the Aviation & Missile ME. However, averaged over a five year period, this equates to losing approximately 29 personnel per year. Using historical data from fiscal years 2012-2015, the average loss per year due to retirements was 13 (PEO AVN G-1, personal communication, November 5, 2015). Should all other loss categories remain constant, this would bump retirements to 46% of PEO AVN total future attrition compared to ~29% in the original numbers. Similar to the rise described in the AMCOM discussion, the outflow rates will be on the rise.

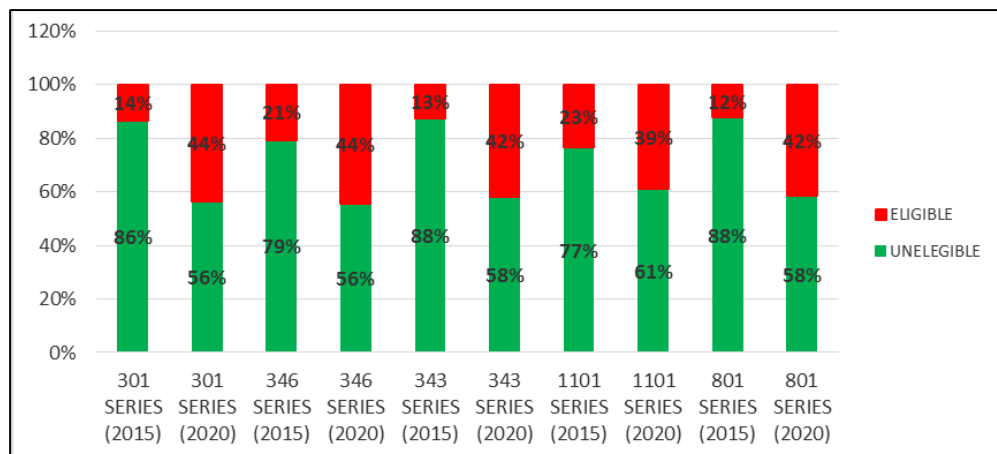


Figure 18. PEO AVN retirement eligibility as a function of labor category. (Hodges, 2015)

An evaluation of PEO AVN management is shown in Figure 19. For purposes of this organization, management was defined as all NH-IV positions. As discussed in Chapter 3, raw data reports received from organizations were not always consistent due to software differences. Supervisory classification was not available for the PEO AVN data which forced the analysis to center only upon NH-4s (referred to herein as managers). The data showed that there was nothing abnormal about the retirement potential for management in PEO AVN when compared to other organizations across the Aviation & Missile ME.

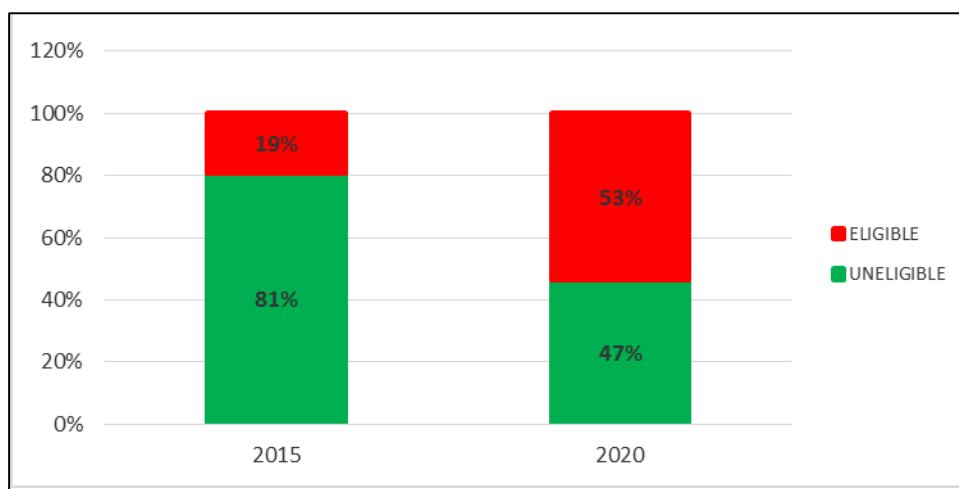


Figure 19. PEO AVN retirement eligibility of the management positions. (Hodges, 2015)

The retirement prediction method infers that a number closer to 32% of the management population will opt for retirement by 2020, which is within the average of the ME.

As with PEO M&S, PEO AVN is under the Assistant Secretary of Army for Acquisition, Logistics and Technology (ASA(ALT)). Therefore, it is assumed that outflow predictions will be commensurate with Acquisition Support of the Nataraj et al. (2014) report. Specifically, it is

expected that hiring will be at 40% of the historical levels (Nataraj, Hanser, Camm, & Yeats, 2014, p. 34) to meet future demands and authorized levels of strength. The inflow is expected to be mostly transfers from other government organizations and specialized hiring actions for veterans as it has been in the past.

PEO AVN is currently below their authorized strength levels. As such, they are permitted to hire in order to reach authorized levels, but only with approval from higher headquarters (PEO AVN G-1, personal communication, February 3, 2016). Considering the predicted outflows in voluntary retirements, it is apparent that some degree of inflow will be required to reach targeted FY19 strength numbers. Under the assumption that voluntary retirements will be 45% of the total outflow, PEO AVN is looking at having to replace roughly 250 personnel total to reach a strength in 2020, 8% less than in FY16. The challenges associated with ensuring age diversity while also selecting experience to feed the 301 population is a very similar one with PEO M&S. As with PEO M&S, PEO AVN will likely continue to fill the preponderance of 301s and 346s with a blend of retired military aviators with acquisition experience and transfers from other organizations. The 301 and 346 vacancies to be filled are estimated to be approximately 120. The 800 and 1102 series is expected to be a different story given the unique qualification and skill requirements for positions of this nature. The series of engineers, estimated at roughly 24 positions needed, will likely need to be fed by transfers from the AMRDEC. The series of 1102s, estimated at roughly 30 positions needed, will likely be transfers from the ACC.

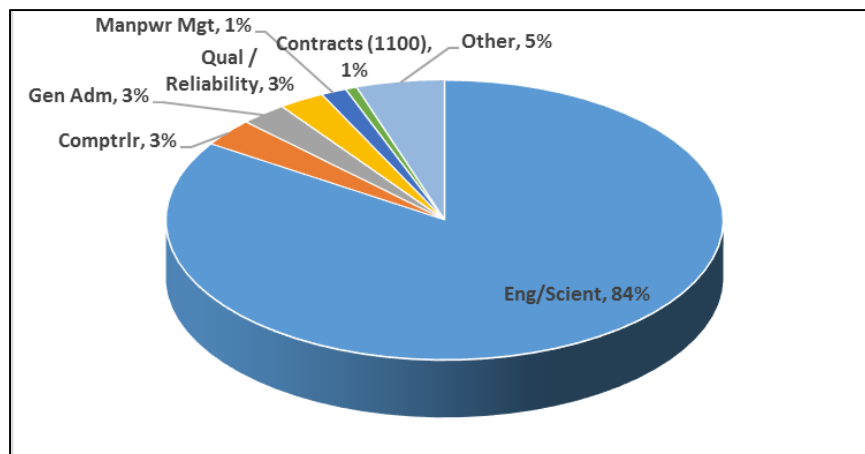
A final noteworthy point of the PEO AVN population is that although there is no “bathtub effect”, there is a significant number of the population above age 50. If the 250 personnel brought on board over the next 5 years does not impact the age profile of PEO AVN,

then nearly half of the workforce that remains are eligible for retirement. The challenge to reduce in strength by 8% should be an easy one for PEO AVN. The real challenge will be to safeguard against reducing any more than 8%.

### **The Aviation and Missile Research Development and Engineering Center (AMRDEC)**

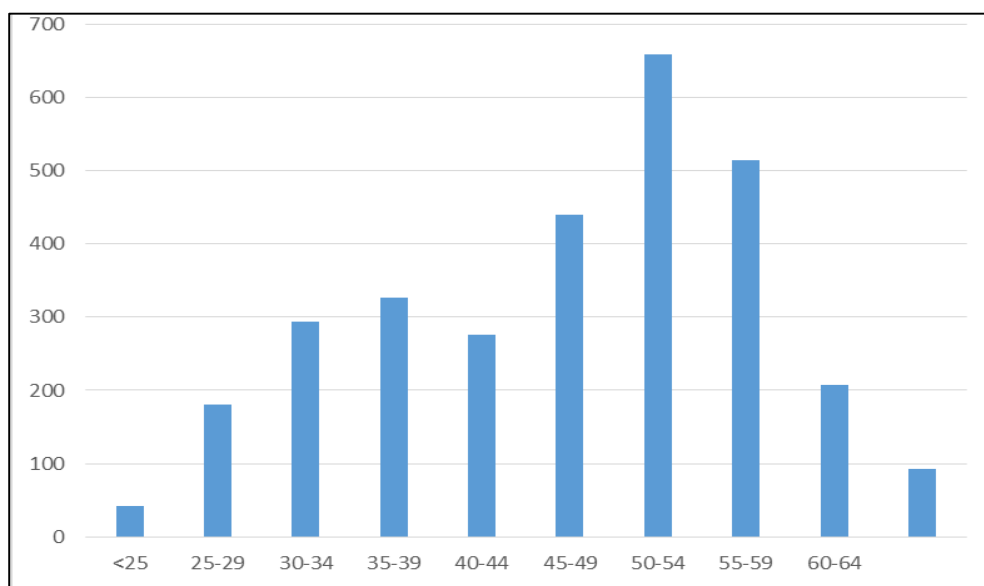
The AMRDEC reports to the Research Development and Engineering Command (RDECOM) with command headquarters in Aberdeen Proving Ground, MD. The command has a mission of ensuring decisive capabilities for unified land operations to empower the Army, the joint warfighter and our nation now and through 2040 (US Army Research Development and Engineering Command, 2015). As the acronym implies, the AMRDEC provides a crucial technical function unique to aviation and missile initiatives to the Material Enterprise. The data considered herein applies only to the AMRDEC community located in the Huntsville / Redstone area and not the RDECOM as a whole.

As evidenced by Figure 20 below, the engineers are clearly the crucial function of the organization comprising 84% of the workforce. Many of these engineers directly support the developmental projects and sustainment of PEO Aviation and PEO Missiles and Space managed initiatives.



*Figure 20.* Profile of the various job series at AMRDEC. (Hodges, 2015)

The average age of the AMRDEC is 47 years old with a median of 49 years making them tied with ACC-Redstone for the youngest organization across the Material Enterprise. It is noteworthy that the term “young” here should only be considered as relative to the Aviation and Missile Material Enterprise. In comparison, the median age of those employed in the United States in 2014 was 42.3 according to the Bureau of Labor Statistics (United States Department of Labor, 2015) which implies that AMRDEC is really not that young from a more global perspective.



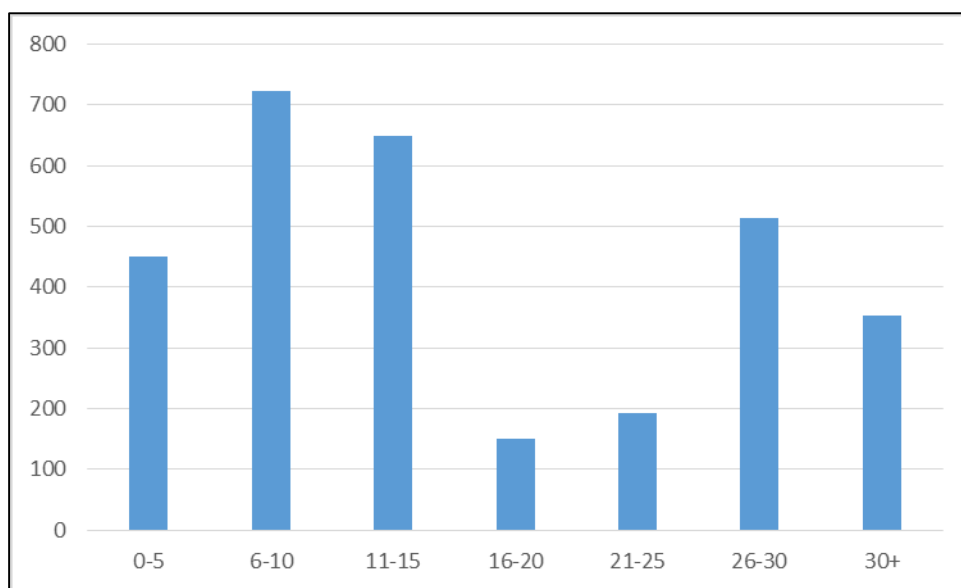
*Figure 21.* Histogram of age at AMRDEC (FY15). (Hodges, 2015)

Common with AMCOM and the two PEOs, AMRDEC age histogram is skewed towards an older workforce (Figure 21). There are over twice as many people in the 50-54 band compared to any band below the age of 45. Also noticeable is a small “bathtub effect” in the 40-44 age band which may well be the consequence of the hiring freezes of the 1990s. Any future hiring



freezes as imposed by RDECOM will impose a serious challenge in any attempt to move towards a more equal distribution in age.

The average number of years of service in AMRDEC is 16 which is close to the average of the Aviation & Missile ME. The histogram depicted in Figure 22 shows a typical “bath-tub effect” in experience between years 16-25. The fact that the AMRDEC employee average age is the lowest of the ME organizations, yet has time in service comparable to other ME organizations indicates that AMRDEC has hired more employees out of college than the other organizations. As discussed earlier, being able to continue hiring the younger generation could be challenged by the need to reduce TDA.



*Figure 22. Histogram of years-service at AMRDEC (FY15). (Hodges, 2015)*

A look at the potential of losing specific labor categories to attrition is shown by Figure 23. The crucial engineering function shows retirement eligibility rates which are slightly below the average observed among the other four organizations. The population of engineers move to a 33% retirement eligibility by 2020 is not quite as severe as the 36% weighted average across the

ME. The retirement prediction method suggests a number closer to 20% of the present engineering population will opt to take the voluntary retirement by 2020. Although there is no serious threat to retirement attrition of engineers, the future predicted retirement eligibility associated with the General Administration is relatively high at nearly half the population eligible by 2020.

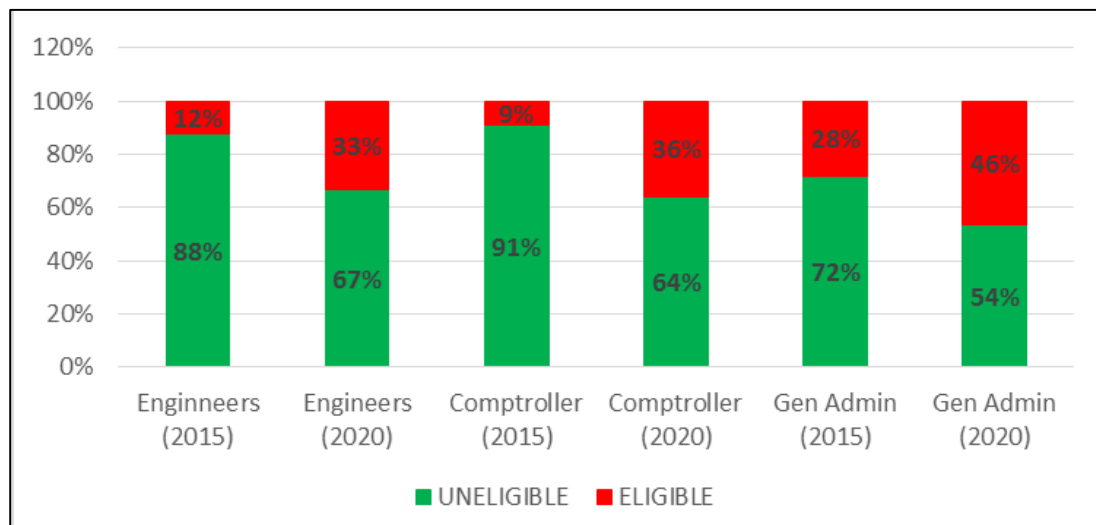
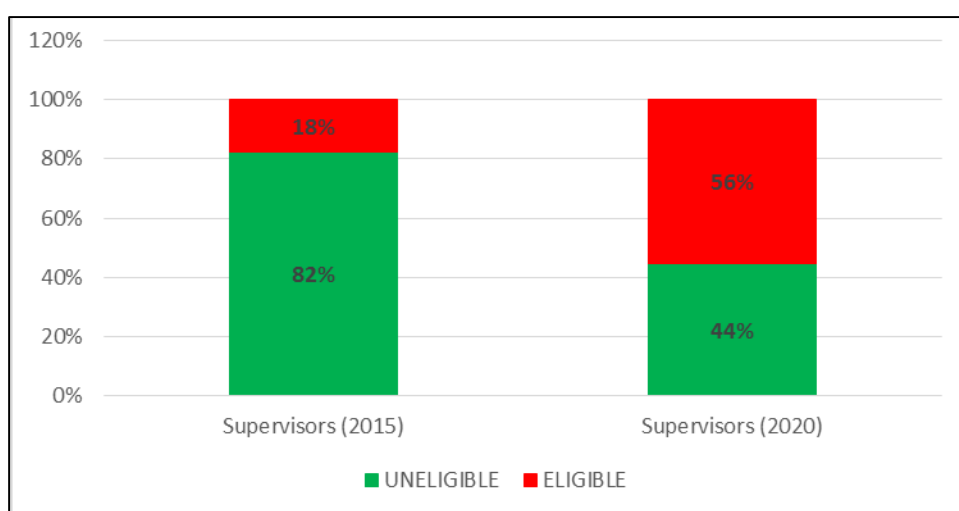


Figure 23. AMRDEC retirement eligibility as a function of labor category. (Hodges, 2015)

By 2020, 46% of the current population of general administrators become retirement eligible. The retirement prediction methodology suggests a number closer to 33% of the current population of general administrators will opt to select the voluntary retirement option. This labor category only comprises 3% of the total population. However, with constraints imposed on the inflow of personnel, the future general administration strength deserves attention by AMRDEC Human Resources in order to maintain strength at proportionate levels.

An analysis of all positions in the AMRDEC classified as “Supervisory” is shown in Table 24. 56% of the current population of supervisors become retirement eligible by 2020. The retirement prediction methodology suggests a number closer to 27% will opt to select the

voluntary retirement option. The disparity between predicted attrition and eligibility may be explained by the fact that a very large percentage (54%) of the eligible pool in 2020 are below the typical retirement age of 61. A 27% predicted attrition of the supervisors in 2020 is close to the average across the Aviation and Missile Material Enterprise. However, a 56% eligibility pool is above the Material Enterprise average. Although there may be no serious threats to supervisor attrition in 2020 in the AMRDEC, the risk of greater-than-average attrition rises steadily over the subsequent years thereafter.



*Figure 24.* AMRDEC retirement eligibility of the supervisory positions. (Hodges, 2015)

The target TDA reductions between now and 2019 were not provided by the AMRDEC. However, inferences can be made in consideration of a few facts. For one, the AMRDEC is currently working to address a situation of being over their approved human resource strength (commonly referred to as over-hires). AMRDEC appears to be working to close this gap as evidenced by a “six to one” rule in place for bringing on board employees outside AMRDEC. Under this rule, six positions have to be eliminated for every one employee hired that comes from outside of the organization. The “six to one” rule is essentially a hiring freeze in an attempt

to reduce to authorized strength levels. The RAND study suggests that hiring at 50% of what has historically been done reduces the engineering community by approximately 10% and a hiring freeze just over 20% by 2017 (Nataraj, Hanser, Camm, & Yeats, 2014, p. 37). However, the study does not mention the over-hire consideration. Given that “six to one” is still in place today, it appears AMRDEC has targeted a total reduction of ~20% in order to resolve the overhire situation. A number in this neighborhood stands to reason given an expectation their reduction would be higher than the ME weighted average of 13% considering they must deal with over-hires as well. Given that 20% are expected to opt for voluntary retirements, a needed inflow of ~760 personnel was calculated to achieve a 20% reduction. Although a very stringent hiring restriction currently exists, AMRDEC demands for future human resources is relatively high as compared to other organizations in the Aviation and Missile Material Enterprise. The challenges associated with ensuring age diversity will become a challenge for the AMRDEC and the average age is expected to increase slightly as long as hiring freezes remain in effect. Should attrition rates not follow the historical patterns, a VERA/VSIP becomes a possibility to help influence the outflow. The issues identified with supervisor retirement eligibility and general administrator attrition are noteworthy, but may be managed with proper AMRDEC Human Resources oversight.

### **The Army Contracting Command (ACC) - Redstone**

As with AMCOM, the ACC is another major subordinate command under the Army Materiel Command (AMC). The ACC supports Army acquisition with a mission of “delivering contracting solutions in support of the Army and Unified Land Operations, anytime, anywhere” (U.S. Army Contracting Command, 2015, p. 5). The command is structured into six contracting

centers that provide contracting support to 12 Program Executive Offices (PEOs) and multiple program managers (PMs) supporting the U.S. Army’s major acquisition programs (U.S. Army Contracting Command, 2015, p. 7). Only one of those centers, ACC-Redstone, is analyzed herein as a part of the Material Enterprise on Redstone Arsenal. The ACC has developed a Human Capital Strategic Plan that covers the period of time addressed by this study (2016-2020). One of the primary goals of that plan is to recruit and retain as required to keep their professional workforce at required strength levels (U.S. Army Contracting Command, 2015, p. 22).

The business and industry group (1100) constitute the preponderance of the ACC-Redstone workforce with the 1102 series being the most common in this group. The general administrative, clerical and office services group (300) are a distant second in size followed by a hodgepodge of other functions (Figure 25).

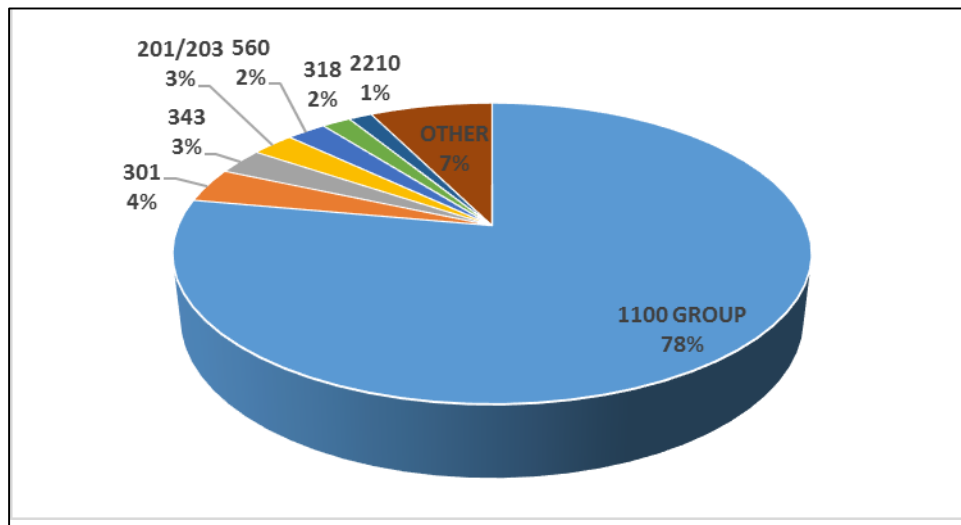
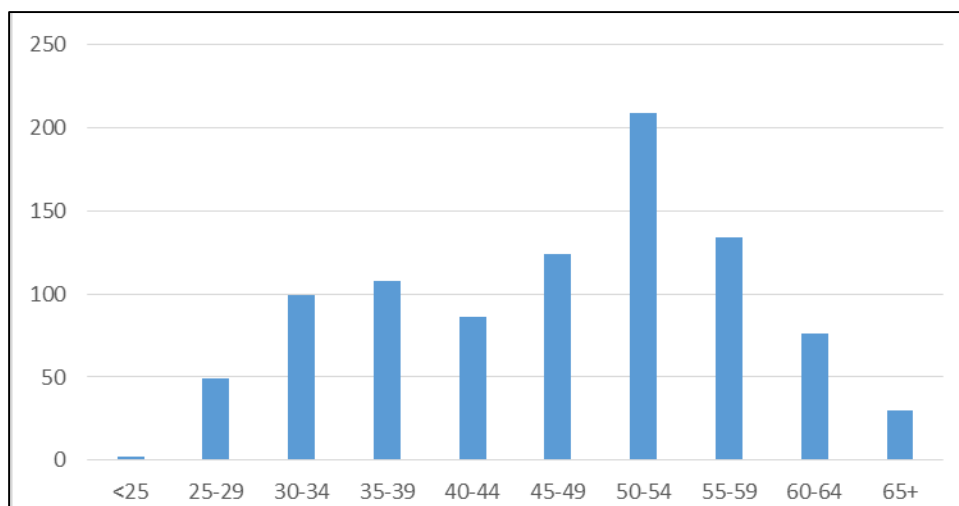


Figure 25. Profile of the various job series at ACC-Redstone. (Hodges, 2015)

The average age of the ACC-Redstone is 47 tying it with AMRDEC as the youngest organization across the Material Enterprise (with “young” being a relative term as described earlier). The age histogram shown in Figure 26 shows only a slight bathtub effect from the

earlier hiring freezes, but is otherwise skewed in distribution showing a large number of the workforce over 50.



*Figure 26.* Histogram of age at ACC-Redstone. (Hodges, 2015)

The histogram showing years of service (Figure 27) shows the highest percentage in the six to ten year bin. Similar to PEO AVN, there is a relatively older average age coupled with a low average years-service indicating that ACC-Redstone may be acquiring many employees through veteran's benefits or possibly experienced business professionals coming from industry. Studies inferred there was a bathtub effect for the 1102s in years of service in between 13-23 years (Allen, Doran, & Westbrook, 2011, p. 1). The effects are still apparent today at the ACC Redstone location as indicated in Figure 27. For further investigation, a histogram was created that focused only upon the 1102 series and in bins of one year as opposed to five year bins (Figure 28).

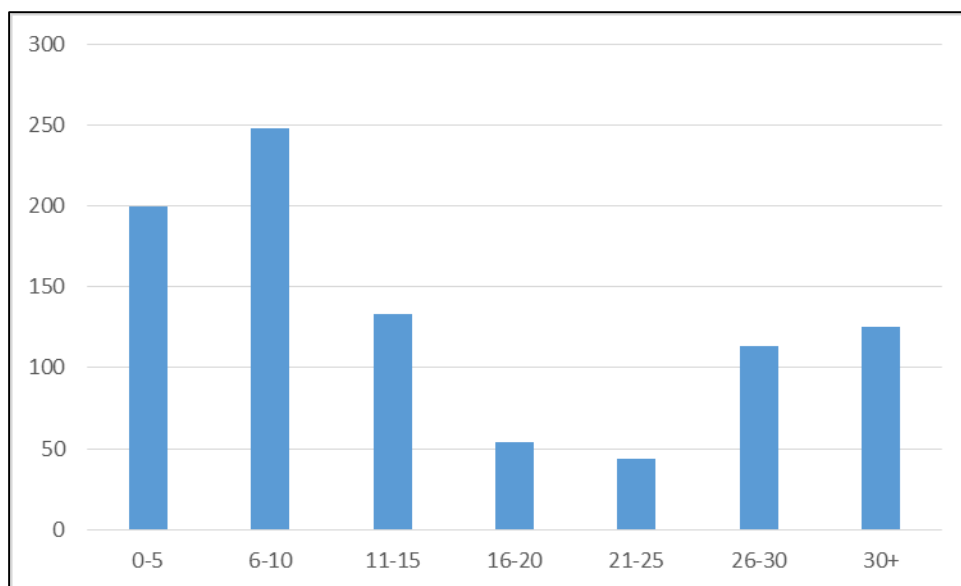


Figure 27. Histogram of years-service at ACC-Redstone. (Hodges, 2015)

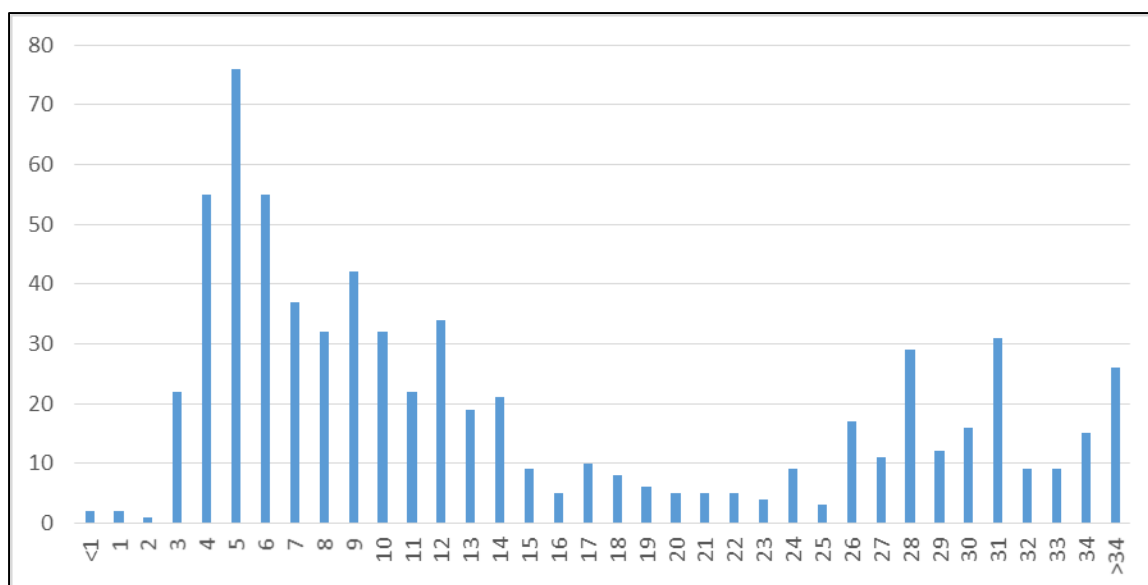


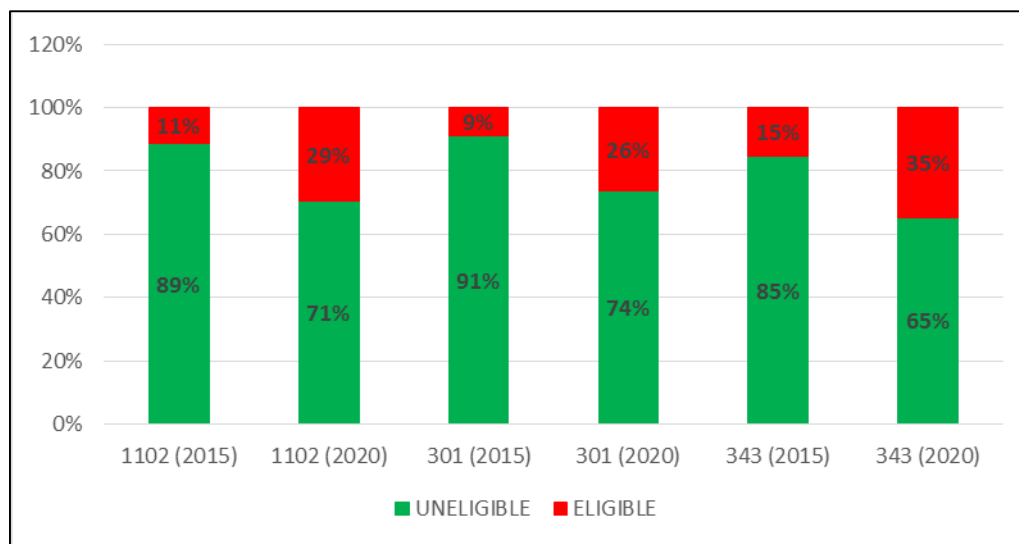
Figure 28. Histogram of 1102 years-service at ACC-Redstone in one year bins.

(Hodges, 2015)

The deeper investigation of 1102 experience as shown in Figure 28 shows that the “bathtub” effect as inferred by Allen et al. (2011) is very pronounced in this series. Figure 28 implies

that as the more experienced baby boomers retire, there will be a smaller pool of experience to backfill from.

Figure 29 analyzes retirement eligibility for the job series that comprise the preponderance of the ACC workforce population.

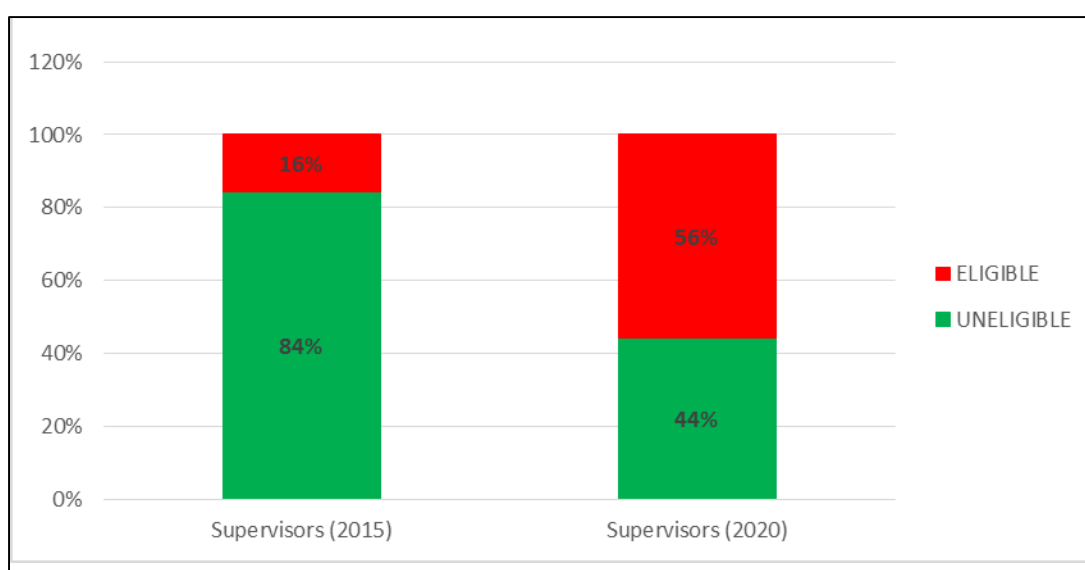


*Figure 29. ACC-Redstone retirement eligibility as a function of labor category. (Hodges, 2015)*

Figure 29 shows that these three crucial functions are not in serious risk of being lost due to voluntary retirement. In fact, retirement eligibility numbers for these series are below what was observed to be normal across the Material Enterprise indicating these positions will not be outside the norm for voluntary retirement attrition. Given the fact that 32% of the total population of ACC-Redstone would be eligible for retirement in 2020, a closer look at a few other series was made. Of the remaining positions in the 1100 group (non 1102s), 58% are eligible for retirement in 2020. Across the entire population, 20% are expected to be lost to voluntary retirement which is tied with the AMRDEC as the lowest expected voluntary retirement attrition. This rate results in an estimated need to hire roughly 300 personnel over the next five years in order to maintain needed human resource strength.



An analysis of all positions in ACC-Redstone classified as “Supervisory” is shown in Table 30. 56% of the current population of supervisors become retirement eligible by 2020. The retirement prediction methodology suggests a number closer to 30% will opt to select the voluntary retirement option. Although the attrition prediction of managers is average (relative to Material Enterprise), the eligibility rates are about 4% above average. Therefore, promotion opportunities and the ability to attract talent into the organization will be normal compared to the other four organizations over the next few years, but should increase thereafter.



*Figure 30. ACC-Redstone retirement eligibility of the supervisory positions. (Hodges, 2015)*

The target TDA reductions between now and 2019 were not provided by ACC-Redstone. However, inferences are made based on research by RAND Corporation. The Army Materiel Command (which ACC is a primary subordinate to) will reduce their workforce by 20% between FY13 to FY17 under a complete external hiring freeze (Nataraj, Hanser, Camm, & Yeats, 2014, p. 28). A complete hiring freeze as defined by this study assumed transfers into the organization

at historical rates, but no hiring of personnel outside the government. Therefore, if ACC is assumed to behave similar to the AMC forecast, then a relatively high number of transfers from outside organizations are expected to constitute the 300 needed over the next five years. The portion is attributable to ACC is tough to predict, but at a minimum it infers a strong likelihood that external hires are expected to continue, albeit under reduced levels as seen prior to the BCA (Nataraj, Hanser, Camm, & Yeats, 2014, pp. 42-47). The ACC-Redstone is not currently under any hiring restrictions for their 1102s and are able to hire to mission needs (ACC G-1, personal communication, March 24, 2016). ACC will likely utilize a mix of transfers from other organizations and continue to take advantage of internal programs (i.e. ACTEDS, DAWDF) in order to fill entry and journeyman level positions (ACC G-1, personal communication, March 24, 2016).

### **The Aviation and Missile Material Enterprise (Consolidated Totals)**

The preponderance of the Aviation and Missile Material Enterprise workforce consists of managers (300 group), business and contracts personnel (1100 group) and engineers (800 group). These three groups make up 85% of the Aviation and Missile ME workforce as shown in Figure 31 below.

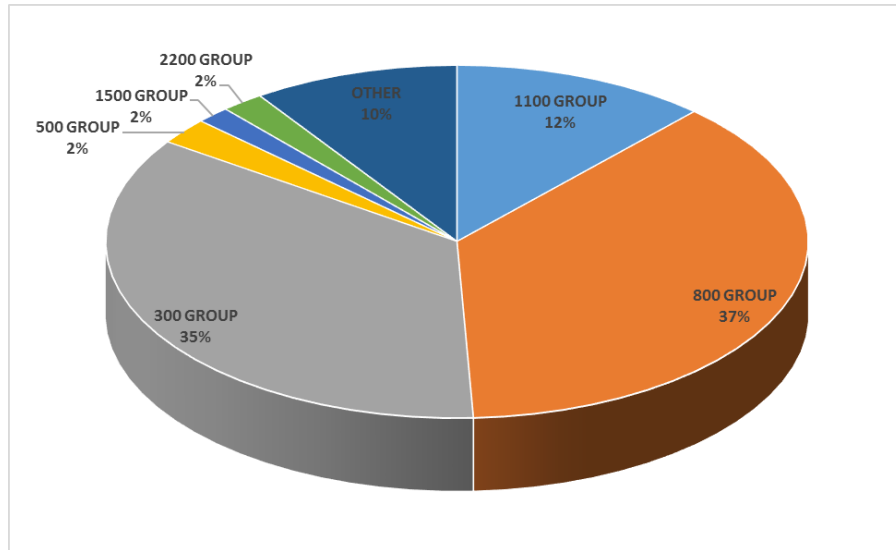


Figure 31. Profile of the various job series at Aviation & Missile ME. (Hodges, 2015)

The “OTHER” category consists of a multitude of groups at less than 2% each.

The consolidated age profile of the Aviation and Missile ME is shown in Figure 32 below.

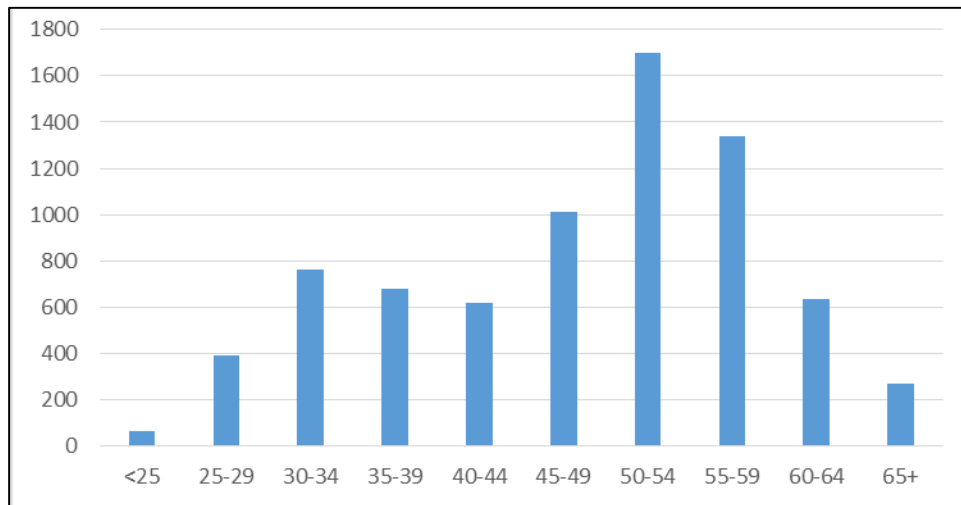
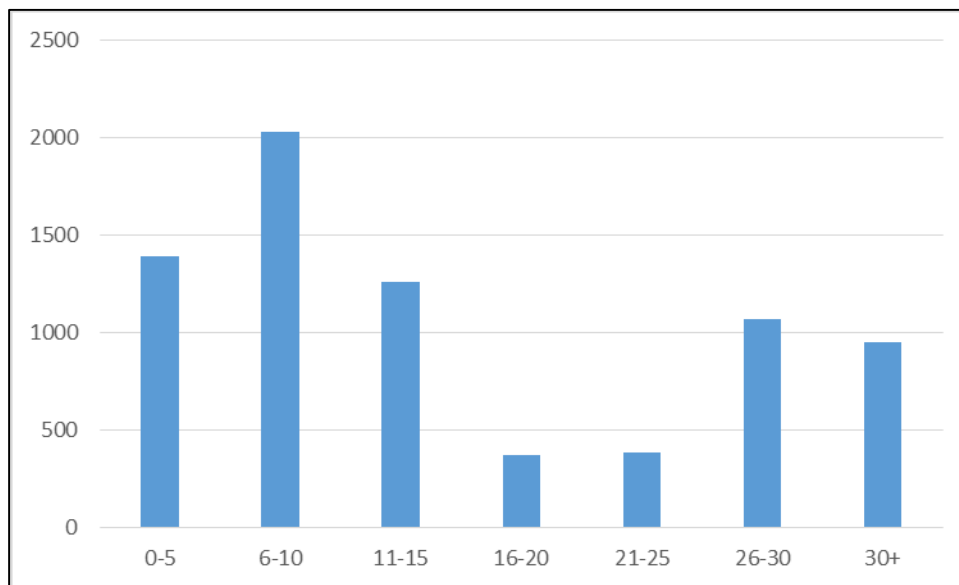


Figure 32. Histogram of age at Aviation & Missile ME (FY15). (Hodges, 2015)

This figure (32) substantiates the initial hypothesis of there being a “bathtub effect” in the Aviation and Missile ME workforce and a smaller pool of candidates to replace the baby boomers who will soon depart civilian service due to voluntary retirement. The average age of this population is 48 years old.

The consolidated years of service profile is shown in Figure 33 below.



*Figure 33. Histogram of years-service at Aviation & Missile ME (FY15). (Hodges, 2015)*

The consolidated years of service profile is skewed towards fewer years of service with a very noticeable “bathtub effect”. The initial gap in experience hypothesis is substantiated by Figure 33. Average years of service of this population is 15 years.

Figure 34 below shows the consolidated totals and corresponding weighted averages for various metrics across the ME. This table captures all data previously explained in the earlier sections and is shown consolidated for comparison purposes.

	AMCOM- REDSTONE	AMRDEC	PEO AVN	PEO M&S	ACC-Redstone	Weighted Averages
Population	2563	3031	523	428	918	
Potential for VERA / VSIP	Low	Moderate	Low	Low	Low	
Job Series at Risk	Legal	Gen. Adm.	-	0896, 0340	-	
TDA Strength Reduction (FY19)	14.5%	Unk.	8.0%	10.0%	Unk.	13%
Potential for External Hiring	High	Mod	Low	Low	Mod	
Eligible for Retirement in 2020	37%	34%	43%	40%	32%	36%
Managers Eligible in 2020	57%	56%	53%	51%	56%	56%
Calculated attrition of Managers by 2020	34%	27%	32%	34%	30%	31%
Current Average Age	49	47	51	48	47	48
Current Avg Years Service	14	16	16.4	16	15	15
Estimated Needed Inflow (FY 16-20)	1000	760	250	190	300	500
Predicted Retirement Attrition (FY16-20)	24%	20%	28%	25%	20%	22%

Figure 34. Consolidated summary table across ME. (Hodges, 2015)

## Chapter 5 - Observations and Conclusions on Data

The problem statement introduced in chapter one raised the question of the demographic health of the civilian workforce behind the baby boomer generation. This paper has addressed the question by studying the age diversity, experience, risks of excessive attrition to the core job series as well as excessive attrition of the supervisory and management positions within the Aviation and Missile ME. It is recognized that there are many other aspects associated with demographic health that should be addressed as well as a much larger population. However, with the research as presented in chapter 4, a number of general observations become apparent for the civilian workforce at Redstone Arsenal after categorizing the data and conducting

statistical analysis as covered in the previous sections. These observations and conclusions are addressed in the list that follows.

### **Redstone Material Enterprise can reduce in Strength without Incentives or RIFs**

As discussed, it is still uncertain as to just how much the civilian workforce must reduce in strength given uncertainties with just how long sequestration will continue. Early estimates by the Secretary of Defense suggested a 5-6% reduction (Nataraj, Hanser, Camm, & Yeats, 2014, p. 1). The forecasted demand models run by RAND suggest a reduction of 3-4% (Nataraj, Hanser, Camm, & Yeats, 2014, p. 39). The Rebalance for an Effective Defense Uniform and Civilian Employees (REDUCE) Act that has been proposed by Rep. Ken Calvert proposes cuts to the civilian workforce as high as 15% (McCalley, 2015). Organizations across the ME are planning for approximately 13% (Figure 34) which is between the two extremes. In the case of the ME at Redstone, the relatively older age works in their favor as nearly a quarter of the workforce is expected to retire within the next five years. Although the ME loses valuable experience with the older workforce when they retire, it also likely saves itself from a Reduction in Force (RIF) or a need to offer an early out incentive such as a VERA or VSIP.

### **There will be Poaching of Human Resources**

One common challenge across all organizations in the ME will be bringing personnel on-board under reduced hiring actions. As discussed in the earlier sections, the outflow rates are expected to increase as a consequence of increased retirements from an aging workforce. In the case of the two program executive offices in the ASA(ALT) (PEO AVN and M&S), personnel experienced in management with an understanding of Army acquisition are needed. This means a low likelihood of younger entry level external hires to feed to 300 group lifeline and high likelihood of veteran's preference hiring actions and transfers from other DoD organizations.

PEO M&S should be able to lure a fair share of personnel away from the other three organizations given they will have a relatively high number of promotion opportunities. It seems a plausible theory that the AMRDEC, AMCOM and ACC becomes the donor to the two PEOs to feed their 0300, 0800 and 1100 group needs since they have personnel supporting and familiar with their programs as well as the appropriate series structure. PEO AVN has the oldest workforce with the highest predicted attrition rate. They not only need to feed a 0300 and 1100 group, but also a 0800 group that they view as a core function. Promotion opportunities will not be as plentiful as PEO M&S, but will be there nonetheless as an incentive for others from the ACC, AMCOM and AMRDEC to make the jump to PEO AVN. Given future hiring restrictions and the need for personnel with highly qualified acquisition experience, these organizations will likely be required to poach from one another as suggested by Allen, Doran, and Westbrook (2011). Looking at the civilian workforce as a whole, transfers will be a zero sum game. However, at the micro level, there will be winners and losers. Expect the organization who can offer the best incentives to win the poaching battle.

### **Demand for 1102s will exceed the Supply**

The 1100 group is a common function used across all five organizations of the ME. All five organizations see the function as a needed core function necessary to execute the mission. Furthermore, the contracting role of an 1102 is considered an inherently governmental function which must be organic and cannot be outsourced (Krieger, 2007) contrary to engineering and most logistics functions. As shown by Figure 31, the supply of the 1100 group is not as plentiful as it is with the 0800 or 0300 groups making it a smaller pool to draw from. Research shows that many 1102 positions are vacant and cannot be filled across all of ACC (Krieger, 2007) to

include ACC-Redstone as well (Allen, Doran, & Westbrook, 2011). The inability to fill these positions are possibly a consequence of stringent qualification requirements and an inability to match compensation that industry provides to business professionals (Krieger, 2007). The issue is compounded by the fact that nearly 20% of the 1100 group will leave the civilian workforce due to voluntary retirement by 2020 thus creating a “bathtub effect” with this group showing a disproportionate gap in the age groups following the baby boomers (see Figure 35 below). In summary, the data suggests that the demand for this service will be high while the supply will be relatively low. ACC-Redstone will have their hands full working to retain the workforce they currently have as well as recruiting to meet future demands.

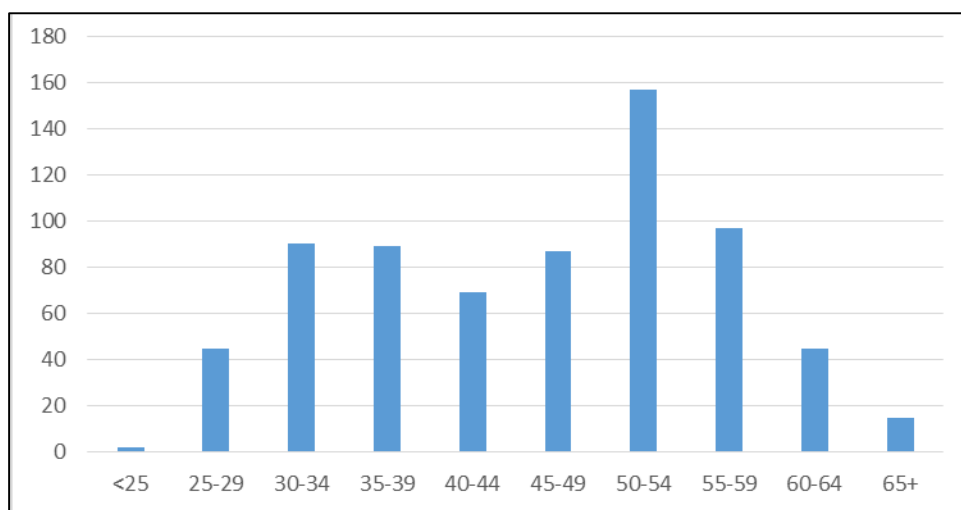


Figure 35. Age histogram of 1102 series only at ACC-Redstone. (Hodges, 2015)

### Human Resource Supply of 300 and 800 Group can be Managed

With exception to the risks of 1102s as addressed above, the other core functions of the Aviation and Missile ME (300 and 800 group) should remain in generally manageable supply. No significant risks to these job functions were identified in the analysis of DCPDS data. AMRDEC has a greater supply of the 800 group than authorized and should be able to reduce to



authorized levels through normal attrition. Requirements of positions in the 300 group suggest that many of these positions can be filled by veteran's preference hiring actions.

### **Supervisors and Managers will be Selected with Less Experience than Before**

Nearly one third of the population of present day managers are expected to retire from the Aviation and Missile ME by 2020. With exception to PEO AVN, the age and experience histograms for each of the organizations analyzed shows a "bathtub effect", or a gap for the age and experience groups right behind the departing baby boomers. PEO AVN has the oldest workforce with 63% of its core workforce being above age 50 and will also lose the highest percentage of employees (28%) to retirement from its current population. All five organizations are faced with the challenge of filling positions that will be vacated by the retiring baby boomers. When supervisory or management level positions become open, there will be a smaller pool of candidates with over 15 years of experience to choose from as a consequence of the hiring freezes of the 1990s (see Figure 33). The perception was conveyed by one human resource manager that personnel are "being promoted into high graded positions who have not spent the time in the lower grades to achieve the expertise required to effectively manage and supervise at the higher levels". Expect to see more future leaders in the acquisition workforce in their 30s than there have been in years past as a consequence of the bath-tub effects.

## **Chapter 6 – Recommendations**

In consideration of the challenges that human resources managers in the civilian workforce face as described in chapter 5, the following recommendations are provided based upon the research conducted.

1. **Build plans, not just strategies.** The two HCSPs reviewed were more of a broader based strategy than they were a detailed plan. The HCSPs did an excellent job of providing a basic framework for how they are going to accomplish their vision with human capital. Kotter asserts that plans flow from a strategy and specifies a step by step process on how to implement that strategy (Kotter, 2002). These two HCSPs did not provide any specific detail on implementation plans. Perhaps that may be by design as detail such as that may be too sensitive for public distribution. Nevertheless, the fact remains that a detailed plan for human capital is a wise investment considering the challenges that are coming in the near term. In speaking with many G-1 and HR managers, there was a plan, but sometimes just not documented for the world to see.
2. **Be very selective on the inflow.** The process for selection is already laden with many EEO considerations that help to ensure proper diversity. Added to that are veterans preferences, ensuring minimum qualification criteria are met, not to mention the significant restrictions on the hiring of external personnel over the next few years. Suddenly, a new challenge is added to the mix in selecting candidates for positions. That challenge is to fill the gaps in the demographics across the workforce. This challenge may easily result in conflicting requirements in the selection process. For example, a baby boomer candidate may be more qualified and experienced, yet a generation X candidate with less experience may help fill the “bathtub” gap and help build the bench for the future. Ignoring the age gap all together places the future of the organization at great risk. Finding a proper balance between experience and the desired age profile will require advanced planning and thought on the part of the HR manager. At a minimum,

the challenge will likely require selection of candidates for positions to be more selective than ever before.

3. **Control the Outflow.** With respect to personnel that transfer, research suggests that the top performers seek the following aspects listed in order of preference: job satisfaction, perceived fairness in financial compensation, strong work relationships and commitment (Mathis, Jackson, & Valentine, 2014). In addition to the aspects already listed, Mathis et al. (2014) assert that job satisfaction is driven by the nature of the work (i.e. person-job fit) and opportunities for advancement. Considering that a poaching war is coming, the leadership of organizations across the Aviation and Missile ME will need to give strong consideration to improving their perceived image with respect to factors such as these. At stake is the retention of the top notch performers. The five organizations analyzed herein do not all share a common financial compensation system. Research has proven that employees will push for a transfer when another financial compensation plan is perceived to be fairer than their current (Mathis, Jackson, & Valentine, 2014). HR managers will be faced with the challenge of incentivizing the older workforce to stay longer and also the retention of the top performers of the younger generations. Research from Mathis et al (2014) infers that the odds of winning the poaching war will be enhanced by whoever offers the greatest perceived financial compensation plan. As a final thought, it is noteworthy that based on historical data, the Network Enterprise Technology Command (NETCOM) is projected to continue to grow in strength even if there is a complete external hiring freeze given the high number of transfers into the command (Nataraj, Hanser, Camm, & Yeats, 2014). An excellent future research project

to aid HR management in the future poaching war would be a deeper dive into understanding why NETCOM has been so successful in attracting personnel.

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**Glossary of Acronyms**

<b><u>Acronym</u></b>	<b><u>Description</u></b>
ACC-RSA	Army Contracting Command-Redstone
ACTEDS	Army Civilian Training Education and Development System
AMC	Army Materiel Command
AMCOM	Aviation and Missile Command
AMRDEC	Aviation and Missile Research Development and Engineering Center
ASA(ALT)	Assistant Secretary of Army for Acquisition, Logistics and Technology
AVN	Aviation
BCA	Budget Control Act
BRAC	Base Closure and Realignment Commission
CCAD	Corpus Christi Army Depot
CSRS	Civil Service Retirement System
DAWDF	Defense Acquisition Workforce Development Fund
DCPDS	Defense Civilian Personnel Data System
DoD	Department of Defense
FERS	Federal Employees Retirement System
FY	Fiscal Year
G-1	Human Capital Staff
HCSP	Human Capital Strategic Plan
HR	Human Resources
LEAD	Letterkenny Army Depot
M&S	Missiles & Space
ME	Materiel Enterprise
MRA	Minimum Retirement Age
NETCOM	Network Enterprise Technology Command
OPM	Office of Personnel Management
PEO	Program Executive Office

PII	Personally Identifiable Information
RDECOM	Research Development and Engineering Command
REDUCE	Rebalance for an Effective Defense Uniform and Civilian Employees
TDA	Table of Distribution and Allowance
TMDE	Test Measurement and Diagnostic Equipment
VERA	Voluntary Early Retirement Authority
VSIP	Voluntary Separation Incentive Pay